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NEWER CONCEPTS OF THE ETIOLOGY AND MANAGEMENT OF IDIOPATHIC ULCERATIVE COLITIS*

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EARLY uncomplicated and localized idiopathic or non-specific ulcerative colitis, I think, originates in early childhood, although the pathological or pathologic-physiologic picture may not become evident until adolescent or adult life. The fact that the changes in the bowel wall begin for the most part in the rectum and sigmoid and spread upward to include the ascending limb of the splenic flexure has been passed over lightly in the discussion of this subject. There are many etiologic conceptions and varied therapeutic approaches. I have never been convinced that any specific organism is the cause.

Seven years ago I became interested in the increasing reports in psychiatric literature of presumable cure of uncomplicated and early ulcerative colitis. Psychiatrists claimed that they could produce a lasting remission; this I considered a challenge. What did psychiatry accomplish that medicine could not? I could only conclude that the treatment had normalized the physiologic picture of the gastro-intestinal tract, especially of the sigmoid and rectum, and that this had led to healing.

I directed my attention to a limited portion of the colon which became ulcerated. The proctoscopic and the roentgenologic picture are pathognomonic, with tubulization of the recto-sigmoid and even the descending colon. The haustral markings are lost; the outer aspect of the bowel wall here has a "feathery edge" or fine "saw-tooth" configuration. The pneumo-

colon shows fine flecks of retained barium if ulceration has taken place. (Air must not be forced into the colon with too great pressure, since perforation has resulted from too much and too vigorous inflation.) With the foregoing objective findings, I had a tangible beginning for observing and evaluating the progress of the disease.

Questions to be answered were: Why does this disease begin in the rectum and sigmoid and spread upward diffusely, with no portion of the mucous membrane in the involved areas escaping pathologic change? What happened to the mucous membrane here which lowered resistance and led to ulceration? The normal protective mechanism must have been interfered with to allow the disease to develop.

Most doctors believe today that this disease, which starts in the mucous lining of the bowel wall, spreads to the deeper layers. Apparently this inflammation is not haemogenous or thromboembolic. The thrombophlebitis seen on microscopic section of the colon is retrograde and not primary. The embolic manifestations or thrombi in the small arterioles feeding the gut have not been established as primary. The organisms found on culture from the stools or on direct smear are as a rule normal inhabitants of the faecal flora.

Therefore, this disturbance in normal physiologic balance must have started in the mucous lining. Several methods of approach were possible. If the psychiatrists were correct in their observations, then the first enquiry had to do with the nerve supply of the gastro-intestinal tract, especially the colon.

Anatomically, the colon has three proved different sources of nerve supply (Fig. 1): (1) Auerbach's plexus (cholinergic) between muscle layers (myenteric) to the submucous plexus of Meissner and Billroth (cholinergic) (these plexuses are probably continuous with that which exists in the small intestine); (2) the sacropelvic (cholinergic) nerve, which supplies the colon from approximately the ascending limb of the splenic flexure up to and including the rectum (Fig. 2), and (3) the sympathetic nerves which supply the whole colon and are derived wholly from the spinal cord (Fig. 3). The vagus nerve (cholinergic), whose parasympathetic fibres

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supply the small intestine, does not, in itself, innervate the colon from the cæcum up to the ascending limb of the splenic flexure (Fig. 4). Apparently the impulses of the vagus, which may eventually reach the colon, may be transmitted through the plexuses. Kuntz,¹ in 1943, expressed the view that "the exact extent of efferent vagus fibres to the large intestine in man is not known". Furthermore, hypermotility of the colon is lost after complete ileostomy, even though the small intestine continues to be hypermotile. Therefore, section of the plexuses by ileostomy may prevent transmission of vagal stimulation.

In this disease the parasympathetic nervous system is the most important. No one, to my knowledge, has reported ulcerative colitis in-

tion of the colon described. Since emotional stimuli are transmitted over both these nerves, the end physiologic effect of overt stimulation is a disturbance in physiologic balance. The motor nerve, *e.g.*, the vagus, causes contraction and peristalsis of the small intestine and relaxation of the ileocæcal valve. The colon has increased motility presumably from impulses transmitted through Auerbach's plexus up to and including the ascending limb of the splenic flexure. The sacropelvic nerve has the same

Vagal Innervation of Colon Through Plexuses

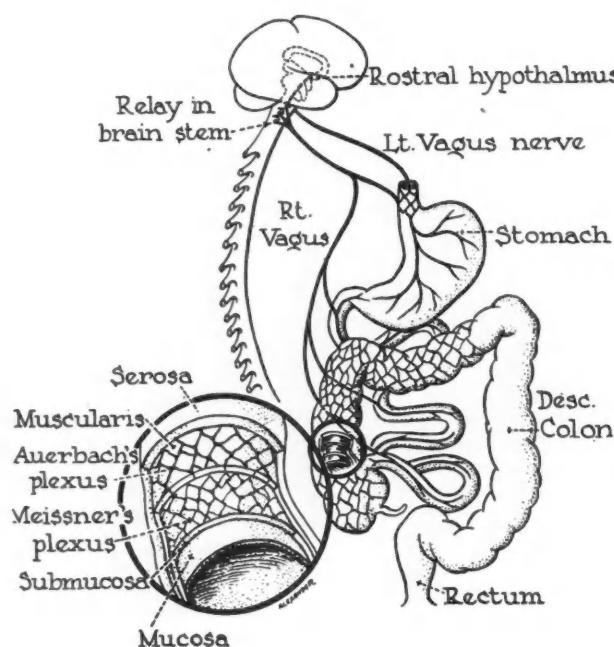


Fig. 1

Fig. 1.—Vagal innervation of the gastro-intestinal tract to the ileocæcal valve, transmitting its impulses by way of Auerbach's and Meissner-Billroth plexuses up to the ascending limb of the splenic flexure. Fig. 2.—Sacropelvic innervation of the colon from the rectum up to and including the ascending limb of the splenic flexure.

Hirschsprung's disease, *per se*. However, it could be superimposed on a Hirschsprung bowel, if the criteria for the development of the disease, which I shall later portray, exists. The vagus arises from the medulla and through its branches indirectly innervates the colon up to and including the ascending limb of the splenic flexure, presumably through Auerbach's plexus. The sacropelvic nerve is formed into a nerve from the central area of the cord—between the second and the fourth sacral—and supplies the pelvic organs, including that por-

Sacral parasympathetic innervation of gut below splenic flexure

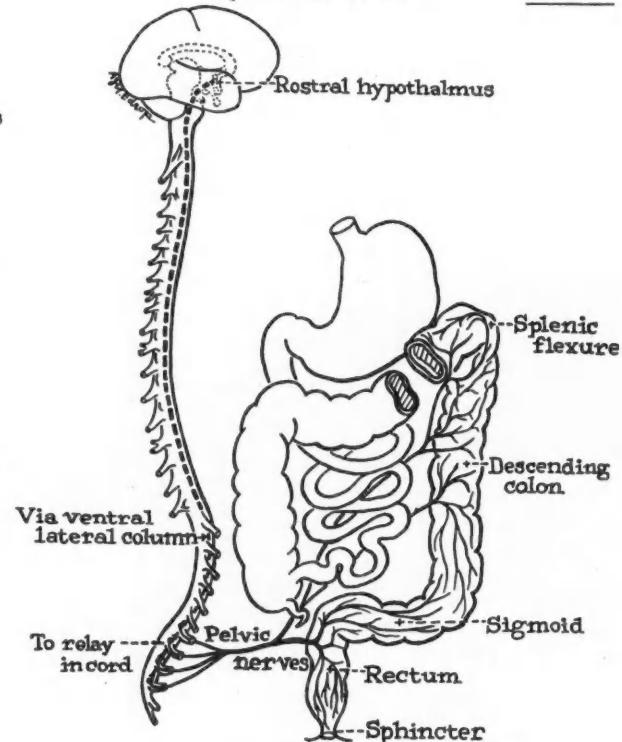


Fig. 2

physiological effect on the distal part of the colon.

I have never observed a case of ulcerative colitis in which motility of the descending colon, sigmoid and rectum was normal, even though the small intestine and the colon up to the ascending limb of the splenic flexure were hypermotile. Therefore it is important to recognize that in the early and localized form of this disease the sacropelvic nerves and their innervations in these structures are a prime source of the physiologic disorder.

Sympathetic Control of Gastro-intestinal Tract

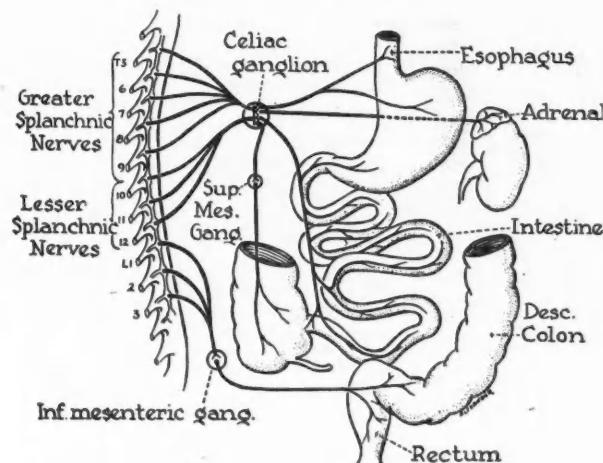


Fig. 3.—Sympathetic innervation of the gastro-intestinal tract.

Apparently, this disease is limited in the early stage to that portion of the colon innervated by the sacropelvic nerves (Figs. 4 and 5). Why does it not invade the part innervated by the other parasympathetic nerves? Certainly all of us have seen the entire colon involved in the chronic form. It would appear that altered emotional stimuli are transmitted principally over the sacropelvic nerves at the outset. Yet the same physiologic abnormality can be produced at the nerve endings of the mucous lining of the whole gastro-intestinal tract. It must be postulated that in the early stages a protective mechanism exists in the mucous lining of that portion of the colon innervated by the other parasympathetic nerves, while the portion innervated by the sacropelvic nerves is more susceptible. The altered emotional stimuli are probably transmitted over all the parasympathetic nerves, directly or indirectly. After the disease progresses beyond the splenic flexure into the transverse colon, the other parasympathetic influence with decreased protection may play a similar rôle.

The concentration of pancreatic enzymes in the lower part of the ileum and cæcum is of a high titre. There must be some attenuation or binding or destruction of these enzymes as they pass down through the colon, so that by the time they reach the descending colon they do not have the same digestive activity. A normal alkaline stool does not cause burning or smarting at the anal orifice if the gastro-intestinal tract has normal motility. During an attack of acute diarrhoea there is usually

smarting or burning. If rapid motility of the gastro-intestinal tract persists long enough, the skin about the anal orifice becomes red, painful and swollen like that about an ileostomy wound. The fresh skin about an ileostomy, however, has a tendency to bleed easily: this must be due to a difference in concentration of pancreatic enzyme. When the stools of diarrhoeal patients are examined for trypsin, the titre is never so high as that of faecal matter from an ileostomy. The concentration of trypsin in the intestinal contents pouring out of the ileum of a recent ileostomy patient is 50 times that in the stools of a patient with ulcerative colitis. Later on, as the ileum assumes some of the function of the colon, the concentration may drop to 10 or 15 times that of the colitis patient.²

The recent reports that bilateral vagotomy produced definite improvement in the clinical picture of ulcerative colitis add weight to the assumption that the titre of pancreatic enzymes is a factor in this disease. This may be associated with lessened pancreatic acinar activity because of the loss of vagal stimulation, or it may be due only to the slowing down of peristalsis in the small intestine and first part of the colon. Neither of these portions of the gastro-intestinal tract is involved in the early picture of this disease.

The similarity of the proctoscopic picture of the early involved mucous membrane to the skin of an ileostomy patient led me to believe that increased concentration of enzyme was an important factor which produced digestion in both conditions. Experimental studies in dogs produced too many variables to allow any conclusion as to the concentration of these mix-

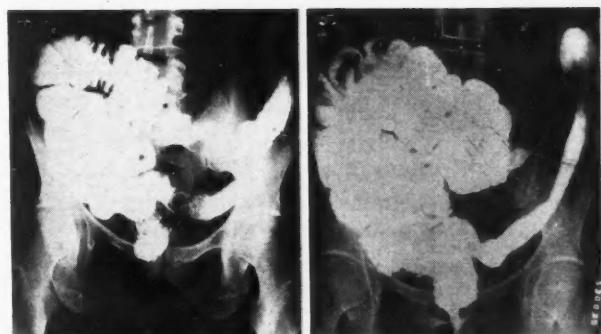


Fig. 4

Fig. 5

Fig. 4.—Ulcerative colitis limited to the part innervated by the sacropelvic nerves. 9/4/45. Fig. 5.—Two years, 8 months later, showing the disease has not progressed beyond that portion subserved by the sacropelvic nerves. 12/5/48.

tures. Unattenuated or unbound trypsin found in the stools of ulcerative colitis patients may be of two sources, one from bacteria, and the other from the pancreas. No one has been able to accurately separate these two sources of trypsin. More careful work in future studies should shed more light on this phase of the subject.

The mucous membrane in early and even in late ulcerative colitis is hyperæmic and swollen, has a cooked appearance and bleeds easily with such slight trauma as brushing with a cotton swab. The pin-point haemorrhages resulting from swabbing early in this disease are diagnostic, occurring in no other disease where macroscopic ulceration does not exist, except acute bacillary dysentery.

in specimens of mucus obtained from the recto-sigmoid region of patients with this disease, a mean of 158.1 units. On the other hand, the ileal stools of 3 patients after ileostomy showed a mean titre of 2.8 units. The highest total of lysozyme content noted in the faeces of a control group was 528 units in 24 hours, whereas the lysozyme secretion of ulcerative colitis patients was as high as 44,400 units in a comparable period (see Table I³).

Meyer and co-workers⁴ have studied 5 patients with peptic ulcer before and after vagectomy. The mean fall in the titre was 44.4%, with a range of 16.7 to 74.4%. This, they concluded, indicates that lysozyme production is at least partly influenced by nervous control. Apparently, in ulcerative colitis the

TABLE I.
LYSOZYME ASSAYS OF NORMAL AND PATHOLOGICAL STOOL SPECIMENS

Source	Individual lysozyme titres (units per g. wet wt.)			Mean lysozyme titre
Normal stools.....	0.5	9.4	4.4	2.7
	0.2	0.8	0.9	
Normal stools (after purging).....	0.4	3.9	1.0	1.6
	0.8	1.3	0.1	
	1.6	3.8		
Chronic ulcerative colitis stools.....	28.3	48.7	22.3	56.0
	49.0	10.5	180.9	
	33.3	47.0	103.7	
	24.2	119.4	4.1	
"Mucus" from chronic ulcerative colitis patients.....	43.5	80.0	15.7	158.1
	167.0	466.0	176.5	
Ileal stools.....	0.1	2.0	3.6	2.8
Idiopathic diarrhoeal stool.....	5.0			

The mucosa of the intestinal tract is covered with mucus secreted by its glands. The complex carbohydrate mucin probably serves chemically and physically to protect the lining cells from enzymes and acids. Liquefaction or hydrolysis of mucin is produced by the mucolytic enzyme lysozyme, which is normally present in the intestinal tract and the concentration of which may change in gastrointestinal disorders. It is obvious that an increased concentration of lysozyme may mean lysis of mucus, and therefore an increased attack by enzymes on unprotected mucosa.

Recently, Meyer, Gellhorn, Prudden, Lehman and Steinberg³ have shown a mean lysozyme titre for normal stools of 2.7 units. Normal stools after purging showed 1.6 units. The mean titre of stools from patients with chronic ulcerative colitis was 56 units. Even more striking was the high titre of lysozyme found

emotional stimuli transmitted to the rectum and sigmoid by the sacropelvic nerves produce more lysozyme than is normal for the mucous membrane of the rectum and sigmoid, and the mucous protection of the sigmoid and rectum is definitely lowered by this mucolytic enzyme. The lowered resistance of the mucous lining may allow tryptic digestion and invasion by bacteria apparently innocuous to a normally protected mucous lining. The increased peristalsis of the small intestine and colon would throw more tryptic enzyme down on an unprotected mucous membrane. Ulceration is the result of enzyme digestion. In a recent communication by Glass, Pugh, Grace and Wolf,⁵ the following statement was made:

"The lack of mucolytic effect of lysozyme *in vitro* on colonic mucus would also indicate that lysozyme cannot be considered a solvent agent for the mucus of the human colon."

"The question of direct mucosal damage from lysozyme cannot be answered by the above data, but it should be noted that the only actual mucosal ulceration which has been produced experimentally required the feeding or infusion of a concentration of lysozyme far greater than that encountered in the human stomach or colon even under pathologic conditions. Further experiments are necessary to establish whether or not lysozyme in physiologic concentrations is actually capable of destroying or initiating destruction of mucosal cells.

"One possible explanation of the striking correlation of elevated lysozyme concentration with ulcerations in ulcerative colitis is that the lysozyme may be elaborated as part of the biologic pattern of defence of the human organism directed chiefly against the possibility of bacterial invasion. The bacteriolytic properties of lysozyme were first recognized by Fleming and are easily demonstrated. More recent data on the relation of lysozyme to bacteriophage would support this inference. Possibly, the increased secretion, or excretion of lysozyme into the colon during periods of emotional conflict preceding and accompanying an exacerbation of ulcerative colitis may be related to the associated engorgement of the colonic mucosa."

These investigators fail to take into consideration: (1) that lysozyme is not increased in stools of patients suffering from diarrhoea due to emotional states, unaccompanied by ulceration of the descending colon; (2) that the digestion of the mucous membrane may be due not to lysozyme, but to other enzymes, *e.g.*, trypsin. Further investigation with a larger series of patients than presented by Glass, Pugh, Grace and Wolf, taking into consideration the other enzymes involved, should shed more light on the pathologic physiology found in ulcerative colitis.

EMOTIONAL FACTORS

The disease process, therefore, is comparable to peptic ulcer except that it is diffuse rather than isolated. Because this discussion suggests that ulcerative colitis may be the result of a pathologic mechanism originating in the emotional centres of the brain, it might be well to inquire into observations on the emotional factors in this disease.

Alexander⁶ has described the process by which the child in early life loses his sovereignty over his excremental functions during training to cleanliness when adults try to influence him to defaecate at regular intervals—for the child a compliance with the adult's wishes. The child may receive in exchange praise, love and sometimes even more material good, such as a piece of candy. Thus the excrement becomes first associated with the concept of possession, and its close relation to money, one of the best established facts of psychoanalysis, can be explained easily on this basis. The child can evaluate his excremental acts as a kind of donation to the adults, and the concept is often rein-

forced by the mother's great interest in the matter. (The German expression for the bowel movement of the child, *Bescherung*, means gift.)

In the early period the child's attitude toward excrement is coprophilic. The excrement is a valuable possession, a source of pleasure and something which can be exchanged for other goods. This coprophilic attitude, however, soon is changed by educational procedures to its opposite, disgust and depreciation. This becomes, then, the basis of the sadistic aggression and soiling connotation with the excremental act. The excrement becomes a soiling weapon, and the act itself has assumed a depreciatory significance. This can be observed most clearly in the little street urchin who defiantly shows his hind-parts and often accompanies this gesture with some kind of aggressive invitation. All these emotional connections, of course, more or less disappear in later life from the conscious personality, but they remain deeply rooted and often appear among the neurotic symptoms of mentally disturbed patients and even in the dreams of normal adults. Apparently, from the evidence of Alexander, the establishment of correct bowel reflexes leading to expulsion of stool must travel over the sacropelvic nerves. Therefore, one would expect that the primary area attacked in emotional disturbances associated with defaecation would be the area subserved by these nerves: only later would the pathologic changes spread upward into the field of vagal indirect innervation of the colon.

Other constellations of emotional factors may seem to produce this disturbed physiological balance. However, in my experience, working very closely with psychiatrists, we have uniformly found that the psycho-dynamic picture as laid down by Alexander was a constant feature associated with the emotional factors of each individual patient.

It is of clinical interest that this psychologic explanation of early infantile bowel habits can be demonstrated in adults.

For instance, a young woman married for six months began suffering from early ulcerative colitis. Under medical management, later to be discussed, the bowel had become entirely quiescent—no blood, normal formed stools and a feeling of well-being. After three months of medical management she complained to me, one Monday, of a precipitate recurrence of her diarrhoea on the preceding Sunday morning. Careful interrogation revealed that she had had no undue excitement on the previous Saturday evening. She had eaten at home on Saturday and Sunday, followed her diet religiously and taken her medicine as directed. About one hour after breakfast, while she was working around the home, diarrhoea appeared. I know from clinical experience

that diarrhoea cannot occur in a well managed subject who has no intercurrent infection, unless there has been overt emotional stimulation of the presumably stabilized emotional system. Therefore, I questioned her on the life situations of that Sunday morning when she was at home with her husband. She denied any unusual happening, but further prying revealed that her husband asked her, facetiously or otherwise, "What about the \$400 I loaned you when we first got married to buy your trousseau? When am I going to get it back?" She didn't have the \$400. She felt distinctly disturbed, regressed into a childhood pattern and immediately had diarrhoea. When I pointed out to her the association with the money and her inability to give it back except with bowel movements, the condition immediately cleared up—mind you, with no change in diet or medical management. This patient subsequently went through an entire pregnancy without further recurrence of symptoms.

Another similar but more complicated life situation was that of a civic-minded attorney in a small town. He had had ulcerative colitis for two years. His stools were free from occult or gross blood for a year and one-half under management, and for two months he had been off drugs entirely and was leading a well regulated life with no particular dietary restriction. He concocted the idea that the church should assume the responsibility for the afternoon play of the school boys, and a deficit of \$600 accrued. He went to the lodge of his community and told them of the deficit, and was told that he had engineered the scheme and that the lodge did not have the money. Simultaneously with the inability to furnish funds, his diarrhea recurred. When the interpretation heretofore outlined was given to him, his bowel movements became normal after a few weeks' management and have since remained so.

A more striking case is that of a 19-year-old student who was under combined medical and psychiatric management at the hospital. He was having twelve stools during the day and six to ten stools at night before and during the early hospital period. He had had ulcerative colitis since the age of 9. His bowel movements narrowed down to one a day and none at night while he was in the hospital. I quote from the notes of the psychiatrist as follows:

"After the sixth interview I was told by you that he was medically under control. I thought that I would try some interpretive material which might precipitate some reaction. During that interview the patient protested the fact that he was so dependent on his parents, he felt badly that he had to take so much from them, he felt badly that they had to supply all of his needs. I then told him that I thought the reverse was true, that in reality he wished to take from them, wanted to be dependent, wanted them to take care of him. He immediately asked to be excused, saying he had to go to the toilet, and subsequently showed a reaction that was diarrhoeal in character."

After he returned to his room, no more bowel movements occurred that day.

In the more superficial disorders, we can handle the emotional patterns by careful, painstaking interrogation. The more deep-seated, the more complex emotional patterns should be handled by a psychiatrist. I sound a solemn note of warning. Once this disease is diagnosed, medical management should be vigorously employed, and at no time should a psychiatrist be allowed to treat a patient with ulcerative colitis without rigid medical control. The disease is too treacherous to be handled by the psychiatrist alone. Perforation and haemorrhage can and do occur without rigid medical control. No psychiatrist can control the emotional problems 24

hours a day. Therefore, I repeat that combined management, if a psychiatrist is needed, is the only safe treatment.

MEDICAL MANAGEMENT

The therapeutic approach to this problem should take into consideration the dietary aspects, the medicinal or pharmacologic agents and psychiatry, if needed.

A. DIET

Diet list for ulcerative colitis.

FOODS ALLOWED

Cereals.—One serving daily. Cream of wheat, farina, cream of rice, strained oatmeal and pettijohns. Puffed rice, rice krispies. Use NO cereal containing bran or whole grain.

Cereal substitutes.—Rice, noodles, macaroni, spaghetti, and vermicelli. All to be plainly prepared without the addition of any fat or seasoned sauces.

Bread.—Enriched white bread toasted. Melba toast, white crackers, zwieback, or holland rusk. Use NO dark or whole wheat breads.

Potatoes.—Mashed, baked, boiled potatoes. Use no skins.

Soups.—Vegetable milk soups made with puréed vegetables and milk. No meat stock soups to be used.

Meat.—Lean tender beef, lamb, veal breast, liver, sweet-breads, chicken livers, kidney, lamb chops, chicken or turkey (preferably the dark meat). Liver should be eaten at least twice per week. Broiled, boiled, baked, or roasted. None to be fried. No gravies or sauces. No fat to be used in preparation.

Fish.—Lean fresh water fish, *i.e.*, whitefish, perch, pike, trout, or bass. To be broiled, boiled, poached, or baked. None fried.

Cheese.—Cottage, cream, mild processed American or Wisconsin brick cheese. Use in moderation. No aged or sharp cheese to be used.

Eggs.—One or two eggs daily. May be soft boiled, poached, stirred, or scrambled over water. None to be fried.

Vegetables.—Two small servings per day, all to be thoroughly cooked and puréed. Avoid vegetables with tough fibres or skins. NO raw vegetables. Tomato juice is allowed and may occasionally be used as a third serving of vegetable for the day.

Fruit.—Canned or stewed fruit, all to be thoroughly strained as baby foods. Strained orange juice daily. NO raw fruit or fruit with seeds, tough skins, or fibres.

Desserts.—Fruit as above. Clear fruit gelatine, rice pudding (no raisins), tapioca, junket, custard, and simple sponge cake in small portions.

Beverages.—At least three glasses of boiled milk daily; may use more. Tea, sanka, kaffee hag. Breakfast cocoa made with boiled milk.

Butter.—Use in moderation.

Condiments.—None to be used except for salt. May use salt liberally. Use no chili sauce, mustard, catsup, etc.

FOODS TO AVOID

Coffee, alcoholic and carbonated beverages. Fried foods, gravies and sauces. Tinned or luncheon meat and fish. Raw fruit and vegetables. Whole grain cereals and breads. Hot breads, *i.e.*, pancakes, waffles, etc. Oils, salad dressings, cream, nuts, peanut butter. Pork and pork products. Spices and condiments. Syrup of canned fruit, berries. Candy, cake with icings, pie, pastry, sugar, jelly, honey, syrup. TOBACCO.

Use cellu sugarless sweetener or saccharine instead of sugar.

Note.—In-between-meal nourishments in the morning, afternoon, and bedtime should be taken.

Milk should be boiled from three to five minutes.

SAMPLE MENU

<i>Breakfast</i>	<i>Luncheon</i>	<i>Dinner</i>
3 oz. strained orange juice.	4 oz. strained milk of vegetable soup.	3 oz. tomato juice
1/2 cup farina.	Boiled whitefish.	Broiled calf's liver.
4 oz. boiled milk.	Mashed potatoes.	Baked potato, no skin.
2 poached eggs.	Puréed spinach.	Puréed carrots.
1 slice white toast.	2 slices white toast.	2 slices white toast.
1 pat butter.	1 pat butter.	1 pat butter.
Cocoa.	Strained apricots.	Baked cup custard.
No sugar.	6 oz. boiled milk.	6 oz. boiled milk.
	No sugar.	No sugar.

BETWEEN MEAL NOURISHMENTS

10 a.m.—Fruit gelatine; 1 slice white toast; 1 pat butter.
3 p.m.—Strained peaches; white crackers, 2 double.
Bedtime.—Rice pudding; 6 oz. boiled milk.

Protein	137
Fat	100
Carbohydrate	293
Calories	2,620

From the outset the patient is fed easily digestible foods which leave little or no residue. Because of rapid passage of the food through the gastro-intestinal tract, absorption is impaired; therefore, the diet is high in protein, calories, vitamins, iron and carbohydrates. The high iron content is advisable also to replace iron lost by haemorrhage from the ulcerative surfaces. Fats usually are not well tolerated, and are used moderately. Omission of free sugar in any form was based upon twofold evidence: first, slow injection of dextrose in normal dogs greatly increases the tolerance of these animals to subsequent more rapid injection: second, the deaminization of protein and the formation of carbohydrate go on at a much slower rate in the liver of colitis patients and therefore will give a more prolonged secretion of dextrose over a long period, and postdigestive hypoglycæmia will be delayed, if necessary, to the next intake of food. However, more frequent feedings than the normal three meals a day were used as an additional factor of safety to prevent hypoglycæmia, and a feeding was given at bedtime to prevent hypoglycæmic manifestations between the last regular meal at night and breakfast. The patient receives his three main meals, a midmorning feeding, one or two midafternoon feedings and a feeding before he retires at night.

My studies led me to believe that physiologic disturbances of the gastro-intestinal tract respond best when circulating sugar in the blood is high at all times. This has been previously emphasized in the treatment of peptic ulcer and fatigue patients.⁷ One of the most important functions of food is to keep the brain

adequately supplied with dextrose. This continuous nourishment has a salutary effect on an emotionally disturbed brain. The tendency to relative hypoglycæmia is revealed by an intravenous dextrose tolerance test. The blood sugar level at the end of three hours is lower as a rule than the initial fasting value.

Smoking is prohibited because it prolongs hypoglycæmia after the initial rise of blood sugar, defeating the purposes of this diet.

B. MEDICINE

1. Atropine sulphate is the drug of choice. It paralyzes the vagus and sacropelvic parasympathetic nerves and usually blocks out impulses from the emotional centres of the brain. Only when excessive stimulation comes over these nerves does an impulse get through to the intestines. The drug may be given to adults in doses varying from 1/200 to 1/50 grain three times at meals and a fourth time at bedtime. The bedtime dose is exceedingly important for the blocking out of emotional disturbances carried over these nerves while the patient is asleep. Furthermore, ten hours may elapse before the next intake of food.

2. Phenobarbital is given in doses of from 1/4 to 3/4 grain three times a day at meals and a fourth time with the bedtime meal. The barbiturates tend to produce a quiescent emotional household.

3. Sodium alkyl or laurel sulphate in doses of 100 to 200 mgm. is given three times a day. (If excess pancreatic enzyme and bacterial trypsin are present, they can be bound with one of these wetting agents.) A recent verbal communication from Karl Meyer stated that these

wetting agents bind lysozyme and make it inactive. Observations on a large number of patients lead me to conclude that this is an important therapeutic agent. It is best given in enteric-coated pills to escape combination with gastric enzymes and prevent nausea. I have used it in ordinary capsule form, but the present preparations have many impurities and may not be well tolerated. More chemically pure preparations of these wetting agents are in the process of manufacture.

4. Sulfonamides inhibit to some extent the bacteria which take their toll on the unprotected mucous lining of the affected portion of the colon. My personal choice among them is sulfathalidine, given in doses of 15 to 30 grains three times a day. This produces a low concentration of the sulfa drug in the blood stream and a high concentration in the bowel content. Antibiotics have little, if any, value in the nonfulminating form of this disease. Sulfathalidine therapy should be used only at the outset and for short periods, because normal inhabitants of the gastrointestinal flora manufacture parts of the vitamin B complex, particularly pantothenic and folic acid, the latter necessary for haemopoiesis. Elvehjem⁸ has shown that if the gut of young puppies is sterilized with sulfonamides, growth ceases because of vitamin deficiency.

5. Crude liver extract, 2 c.c. three times a week intramuscularly, furnishes a high concentration of the whole vitamin B complex, of distinct benefit to the patient. There is some clinical evidence that it is beneficial to liver metabolism as a whole and, therefore, produces a better physiologic balance of the liver. Thiamin chloride should be restricted to small doses because it may be laxative.

6. Contraindicated drugs include bismuth, kaolin and kaopectate, which are dangerous in any form because caking of the faecal content may cause pressure necrosis and perforation. Opiates are rarely needed, but 10 to 15 drops of tincture of opium one to three times a day is the preferable form. I rarely use any opiate.

Acutely ill patients should be hospitalized, but others may be treated while ambulatory. Hospital or ambulatory management is the same as a rule. However, in the presence of severe anaemia with a low level of plasma proteins, transfusions of whole blood, plasma and electrolytes with dextrose may be indicated

early. As the disease gets under control, these emergency measures are not needed.

The type of case selected for medical management is usually one in which damage to the bowel wall has not been too severe. However, even when damage has been considerable, vigorous medical and psychiatric control should be tried. I do not see tubular constricted and perforated colons any more, although other clinicians may still see them. The fact that chronic tubulated, extensively involved colons do come to our attention is a sad reflection on the medical management previously given to the patients. We cannot point with pride to the resultant morbidity and mortality.

If the colon is beyond medical repair, surgical intervention may be indicated. The type of operation should be decided by the combined judgment of surgeon and internist. The psychiatrist becomes an interested observer during the surgical phase. Modified medical management should follow the operation, with choice dependent on the type of surgical treatment. I might add parenthetically that I do not think ileostomy is of any particular value in the acute fulminating phase of this disease. It accomplishes nothing which cannot be accomplished with the present pharmacologic and parenteral therapeutic approach.

RESULTS OF MANAGEMENT

Seven years of continuous experience have led to the conclusion that the medical management outlined for early and uncomplicated ulcerative colitis is the safest and the most satisfactory treatment. The regimen affords the opportunity of rigidly controlling the patient at all times, observing the progress of the disease through the proctoscope and noting complete healing when the rectum and sigmoid mucosa no longer bleed when swabbed with cotton. This disappearance of bleeding on trauma is one of the most accurate criteria that the mucous membrane is no longer the seat of this disease. Roentgenologically there is no irritability; the feathery edge of the colon disappears; haustral markings may reappear, and flecklike ulceration on pneumocolon is no longer evident. Thus the lower part of the colon is restored to a near normal pattern.

In my experience, only under this management can the psychiatrist be allowed to go at the emotional household as hard as he pleases

without doing the patient harm. I have seen acute fulminating complications arise when the psychiatrist alone has treated the disease. Finally, I am led to believe that of all the diseases of the gastro-intestinal tract for which combined medical and psychiatric control is desirable, non-specific ulcerative colitis lends itself to the most lasting and satisfactory result.

CONCLUSIONS

1. Emotional stimuli from the hypothalamic region are transmitted through the spinal cord and are carried by the sacropelvic nerves to the rectum, sigmoid and descending colon up to and including the ascending limb of the splenic flexure.
2. Lysozyme (a mucolytic enzyme) is partly influenced by nervous control. The increased stimulation by the sacropelvic nerves presumably produces a higher titre of this enzyme under the influence of emotional stress. The apparent loss of mucous protection allows the digestive activity of the tryptic enzyme from the pancreatic secretion and bacteria to take their toll on the mucous membrane.
3. Ulceration results from this pathologic change.
4. Treatment should (a) be directed at the eradication of the emotional stimuli; (b) paralyze the sacropelvic parasympathetic nerves by atropine sulphate; (c) abolish cortical inhibitory influences on the hypothalamic region by the use of barbiturates. (d) Enzymes should be bound by wetting agents as sodium alkyl sulphate to prevent their digestive activity. (e) Sulfonamides should be given cautiously and only for limited periods.
5. Psychotherapy should be accompanied by rigid medical control at all times.

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HOMOSEXUALITY—A MENTAL HYGIENE PROBLEM

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ACCORDING to an old definition, mental hygiene is directed towards helping individuals to give their best to the world and to know the deep satisfaction of a life richly and fully lived. Preston¹ defines mental health as the ability to live (a) within the limits of one's bodily and mental equipment; (b) with others; (c) happily; (d) productively; (e) without being a nuisance. To physicians, clinical psychologists, social workers and clergymen, the problem of homosexuality presents a frequent challenge to their wise use of mental hygiene measures in giving help to individuals with homosexual problems of adjustment.

In this article, the problem of homosexuality will be discussed under three headings: (1) What is a homosexual? (2) How do homosexuals "get that way"? and (3) What can be done to help these individuals make a good adjustment?

WHAT IS A HOMOSEXUAL?

The public very frequently identifies the homosexual with the sex pervert. This is incorrect for two reasons. First, large numbers of sex perverts are not homosexual at all. Indeed, a very considerable percentage of them are heterosexuals, since their sex activities are always directed against persons of the opposite sex.

Sex perversion has nothing to do, as such, with whether an individual's sex activity is directed towards the same sex or the opposite sex. Rather, the term "sex pervert" should be reserved for those whose sex life is anti-social, that is, is carried out in a way which is considered to be injurious to other people, or a violation of their rights, and which is considered to be against the interests of society as a whole. Such activities have therefore been made punishable in courts of law.

Secondly, a very considerable number of homosexuals are not sex perverts in the above sense. They are not anti-social in the sense that

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they are a menace to others. Many of them, while interested sexually in individuals of their own sex, do not have overt homosexual experiences at all. Many are thoroughly social in their conduct, and, in addition, make very considerable contributions to society through public service, welfare work, art, music, literature and science. So far as society goes, it should, therefore, be interested in promoting among homosexuals, the mental hygiene objective given above, to give their best to the world and to have the satisfaction (as far as may be) of a life richly and fully lived. It should be remembered that homosexuals, like heterosexuals, may be social or anti-social in their behaviour.

The first half of the term "homosexual" is often misunderstood. It is not derived from the Latin word "homo" meaning "man", but from a Greek word which means "same". A homosexual is, therefore, an individual of *either* sex whose love life and/or sex activities are directed towards his or her own sex.

The identification of the homosexual is not as easy as it might appear. There are not just two classes of individuals, the homosexual and the heterosexual. The experience of psychiatrists and clinical psychologists that the above is not true has had confirmation in the Kinsey Report.² Homosexuality apparently is a matter of degree. Kinsey found that 37% of the total male population of his sample had at least some overt homosexual experience to the point of orgasm between adolescence and old age. If these data are substantiated, they mean that the above would be true of nearly two males out of every five one encounters.

Other data from the Kinsey report indicate that 63% of males never had overt homosexual experience to the point of orgasm. Fifty per cent of the males who remained single until age 35 had had overt homosexual experience to the point of orgasm since the onset of adolescence; 13% of the males reacted erotically to other males without having overt homosexual contacts after the onset of adolescence; 25% of all males had more than incidental homosexual experience or reactions for at least three years between the ages of 16 and 55; 18% had at least as much of the homosexual as the heterosexual in their histories for at least three years between the ages of 16 and 55; 13% of the population had more of the homosexual than the heterosexual for at least three years between the ages of 16 and 55; 10% of the males were more or less exclusively homosexual for at least three years between the ages of 16 and 55; 8% of the males were exclusively homosexual for at least three years between the ages of 16 and 55; 4% of the white males were exclusively homosexual throughout their lives after the onset of adolescence.

It would appear from the above data that homosexual activities, at least in males, are very

common and vary greatly in degree. Some writers in their attempt to place all human sex activities in categories, have suggested a third class of "bisexuals". Kinsey is probably right in regarding this as an unfortunate use of a term which often has other implications. It would seem to be better to think in terms of the *degree* of psychic and overt homosexual activity, rather than to try to place all individuals in any one of even three categories. Apparently human individuals may vary from those who remain exclusively heterosexual throughout their lives (estimated by Kinsey to be 50% of all males), to those who remain exclusively homosexual in their psychic or overt sex activities throughout their lives (estimated by Kinsey to be 4%). In between are the 46% who, according to Kinsey, engage more or less in both homosexual and heterosexual activities or react sexually to persons of both sexes in the course of their lives. These would include those individuals who, in the absence of the opposite sex, engage in homosexual activities, *faute de mieux*; those whose sex interests and activities are primarily directed towards the opposite sex, but who have homosexual interests and/or activities as well; and finally those whose activities and/or interests are primarily homosexual, but who engage in heterosexual activities as well.

Physicians, psychologists, social workers and clergymen need to be aware of the above differences of degree of homosexuality, so that they may be saved from labelling an individual as homosexual because he has had homosexual experiences when he is primarily heterosexual in his interests. They will know, too, that because some individuals whose interests are more homosexual than heterosexual are able to get married, have normal sex relations and beget children, this does not mean that this adjustment is possible for the more pronounced homosexuals to whom heterosexual relations are not only repugnant but impossible.

The general public, backed by the opinion of some clinicians, thinks that homosexuals can be picked out by their appearance and behaviour. It is commonly believed that homosexual males are feminine in their movements, have high-pitched voices, are artistic, sensitive, and emotionally unbalanced, and are interested in the more feminine occupations. Likewise, it has been thought that homosexual females are masculine in appearance and movement and are

interested in more masculine occupations. While these criteria are not without foundation, they must be used with very considerable caution. Many individuals whose appearance and manner are indicative of the opposite sex turn out not to be homosexuals at all. On the other hand, many homosexuals do not deviate noticeably from the norms of their own sex in either appearance or manner. In any case, the work of Terman and Miles³ on masculinity—femininity traits would indicate that there are not just two classes of individuals in the world, but rather that all males possess some feminine traits in greater or lesser degree, and that all females possess masculine traits in greater or lesser degree. Caution must, therefore, be exercised in picking out homosexuals by appearance and manner alone. The only true test of degree of homosexuality is the degree to which the psychic and/or overt sex interests and activities are directed towards the opposite sex.

HOW DO HOMOSEXUALS GET THAT WAY?

Within the limits of this article, it is impossible to review the literature on the causes of homosexuality. The earlier view was that it was hereditary, or at least congenital. This view would appear to be based on inadequate research data. More recent views which are based on limited research data and on considerable clinical opinion are to the effect that homosexuality is a personality disturbance which, whatever hereditary susceptibilities there may be, is the result of faulty training and environment. English and Pearson⁴ say: "It is questionable whether there is any such thing as a constitutional homosexual. Furthermore, studies upon the glands do not give as yet any evidence that homosexuality is a matter of inherited glandular defect". Those authors go on to say that in seeking for the causes of homosexuality, "we find much the same ones operating as in the development of a neurosis, and we do not think it is stretching the concept too far to say it is a matter of neurotic conflict". These authors regard all forms of sexual perversion as a persistence of infantile trends. They point out what most clinicians will confirm, that "there is a great immaturity in the emotions of homosexual persons". They believe that the homosexual has had difficulties in personality development

in that certain impulses have been frustrated, damned back and blocked in their normal development towards a well-adjusted personality. Another author, Stekel, believes that the organic theory of homosexuality has broken down completely. It is, according to him, a regression to an earlier stage in the psychosexual development of the individual. Frohman⁵ appears to agree with this view.

Like delinquency itself, homosexuality probably has multiple causes. First of all, it is probably true that the nature of the physical and mental equipment of an individual may make it easier or harder for environment to make a homosexual of him. Prudish or over-idealistic or too vulgar attitudes to sex on the part of parents may be a factor. This usually means faulty or inadequate sex education. Great emphasis on guilt for the practice of masturbation may be a factor. In the case of boys, clinical experience would indicate that very many male homosexuals have had mothers who blocked their masculine tendencies, encouraged their feminine interests, and tied their sons to themselves emotionally, either by over-dominance or over-protection. However, some homosexual males have had mothers who were undemonstrative, emotionally detached, and occupied with many outside interests. Because of this, these males may, in retaliation, reject all women whom they identify with their mothers who had rejected them as children.

Many psychiatrists and psychologists believe that, in the development of an individual's love life, there is a normal homosexual stage of intense friendship with the same sex early in adolescence. They, therefore, view homosexuality as a state of arrested development of the love life.

Other possible factors in the development of homosexuality are emotional shock in childhood, due to a threatened deprivation of the mother's love, as well as inability for the boy to identify himself with his father or the girl with her mother. This may be due to the fact that the parent of the same sex is indifferent to the child, or is very inferior to the capable other parent, or is disliked by the other parent.

Then, too, many boys have built up in them by their mothers either a hostility to women or a tendency to place them on pedestals as too lofty and pure to be interested in sex activities. In like manner, girls may be made to believe

that all men are evil wolves and that sex relations are bestial.

As indicated, it is probable that a combination of factors results in greater or less degree of homosexuality among a number of individuals. It is doubtful if early sex experiences with the same sex are as important in developing homosexuality as the public imagines, especially if the individuals are of about the same age. Usually these experiences are not enough in themselves to produce homosexuality, unless other factors which favour the development of the condition are also present.

Homosexuals themselves usually like to think that their condition is congenital, and that nature has played a trick on them. However, physicians, psychologists, social workers and clergymen who have to deal with homosexuals would do well to think of homosexuality as sexual and emotional immaturity, in which certain individuals have not progressed to a concept of heterosexual relations which are concerned with marriage and family formation.

HOW TO HELP HOMOSEXUALS

Those who deal with homosexuals must first of all have a sane, objective view of the problem themselves. Unfortunately, even some physicians have been known to react to homosexuality with disgust, blame, anger and antagonism. This is unfortunate. Obviously, the first step in helping any maladjusted (or sick) person is to accept him as a person needing treatment, rather than as a person to be condemned or blamed. All homosexuals, like all sex deviates or, for that matter, all individuals with serious emotional problems, need help. Many of them need skilful treatment at the hands of a psychiatrist or competent clinical psychologist.

In order to be helped, the individual with homosexual trends must first of all be guided to understand and accept himself. This is true of whatever degree of homosexuality the individual exhibits. Many individuals who are basically heterosexual, and who have had isolated homosexual experiences, become upset and need to be reassured of their basic normality. Others who have had both heterosexual and homosexual interests and activities need to be helped to assess the significance of these, and to develop the heterosexual aspects of their personality. However, in addition to these individuals, there are many who have pronounced homosexual trends, and some whose interests and activities

are chiefly or exclusively homosexual. Some of these individuals cannot, with present knowledge, be helped to achieve heterosexual development. These must be guided to accept themselves without an acute sense of guilt or inferiority. This is often difficult in a society which looks on them with scorn or horror.

In dealing with individuals with homosexual tendencies, it is as futile to tell them "to snap out of it" as it is to tell a tuberculosis patient to "snap out of it". If an individual has more than transient homosexual trends he needs therapy, usually psychotherapy. This may mean anything from the brief therapy of two or three interviews to the deep therapy of a long series of interviews over a period of months. Helping the homosexual to understand the origin of his difficulty and to progress to a higher level of emotional and sexual maturity is the essence of the process whether one accepts or rejects the viewpoint of the psychoanalysts.

Those who undertake to counsel homosexuals have as a basic task the aiding of these individuals to live in a social rather than an anti-social way. No individual, be he heterosexual or homosexual, can be allowed to injure others. Homosexuals often forget this. The heterosexual school principal who interferes sexually with his girl pupils jeopardizes his liberty and his career quite as much as the homosexual school principal who interferes sexually with his male pupils.

It is true that the homosexual has much more difficulty in finding legitimate outlets for his sex needs, and at the same time is thrown into more temptation. He must, however, be helped to live a social rather than an anti-social life.

Homosexuals must be guided to find outlets for *all* of their basic psychological needs in the best possible manner. The needs for affection and belonging can, in our society, be met in concentrated form only in family life. Those with pronounced homosexual tendencies must learn to understand this fact. They should realize that homosexual attachments, even if mutual, are seldom more than transitory and superficial and are not the solution of the problem of their affectional needs. It should be remembered that with all the pressures and safeguards which society employs to stabilize heterosexual unions in marriage, we still have a large number of divorces and separations. The chances of homosexual unions lasting when

there is not only a complete absence of these safeguards, but also where there is the presence of society's violent disapproval, are very slim indeed. Homosexuals who cannot be helped to heterosexual maturity must, therefore, like all unmarried folk, learn to find satisfaction for their needs for affection and belonging in a more diffused manner in a circle of good friends who care for them and take responsibility for them.

A large number of homosexuals try to find satisfaction for their needs for affection and belonging by joining gangs of homosexuals in their own communities. This is a very doubtful solution to their problem. They need to be reminded that society exacts a tremendous price for being different. The only human beings who can afford to be greatly different from others in their behaviour are those who are so because of great devotion to a great cause. The Christian martyrs, and those devoted to religion, welfare, or to such great aspirations of mankind as art, music, literature and science can afford to be different. They are sustained by their sense of the approval of God or of their own consciences, or of their own contribution to humanity's welfare. No one can afford to be different for a low or unworthy cause. Homosexuals need to learn this lesson.

Homosexuals must live, of necessity, in a world built for heterosexuals. In addition, in English-speaking countries homosexuality is looked upon with scorn, horror and disgust. Besides, any overt activities are against the law, and are severely punished. It would seem better, therefore, for the confirmed homosexual to learn to live as normal a life as may be by making friends with heterosexuals and sharing their life as far as possible.

While there is doubt as to whether sublimation of sex desires into other channels is ever completely satisfactory or possible, nonetheless homosexuals can find reasonably satisfactory outlets for their needs for independence, achievement, recognition and self-esteem, and to some degree emotional security, by giving themselves to almost any worthwhile area of human endeavour—to art, music, literature, various aspects of community welfare and to jobs which may be anything from social work, teaching or medicine, to business occupations and various forms of skilled craftsmanship. In other words, while it is vital for all individuals to find satisfactions for their psychological needs through

work, recreation and community service, it is even more important for homosexuals to do so. Because it is difficult for homosexuals to find satisfactory outlets for their needs for affection and belonging, it is vital that every effort be made to help them to find as rich satisfactions as possible for their needs for independence, achievement, recognition and self-esteem. Such satisfactions will help to balance the blows to their security and self-esteem, which are apt to be the result of concealing their differences from others and of their own awareness of these differences.

Those who counsel homosexuals must help them to see life realistically. Homosexuals are handicapped persons in our society. Like all handicapped persons, they need help in accepting their handicap objectively and then going on to realize their potentialities. As in the case of all handicapped folk, it frequently is not the handicap that is the major problem but how the individual feels about his handicap.

Some homosexuals refuse to accept their handicap. They may spend their time envying from the depths of their beings the heterosexuals who have a home and children. They forget that all human beings have problems and that life is not a bed of roses for all heterosexuals. Other homosexuals feel bitter and resentful of their condition, and develop attitudes and compensations which are a millstone about their necks. They become another example of "to him that hath not shall be taken away even that which he hath". Homosexuals need to learn that all human beings have handicaps and that all human beings who grow up have to learn to accept themselves with whatever assets and liabilities they have. The tall, the short, the fat, the thin, the brilliant, the dull, the strong, the weak, *all* have to accept themselves. So must the homosexuals.

A great many pronounced homosexuals, either because of their basic immaturity, or as a response to their handicap, develop superficial and irresponsible attitudes. These are the attitudes of the childish individual who refuses to grow up by taking responsibility for himself and others. Helping homosexuals to grow up is a major task of those who undertake to counsel them.

Finally, homosexuals must be helped to discover for themselves that it is fun to be

reasonably normal and that it pays great dividends. There is no use of the homosexual lamenting society's attitudes to homosexual interests and attitudes. Bumping one's head against a stone wall does not hurt the wall. A more sensible attitude lies in accepting one's handicap if it cannot be changed, making as wise adjustments as possible, and going on to develop and make the most of one's assets.

Those who do not understand homosexuality often urge the homosexual to get married as a solution to his problems. This may lead to nothing but disaster. However, since there are various degrees of homosexuality, many individuals who have had homosexual experiences are able to make this adjustment. Others can be prepared for it after some psychotherapy. Cases are known to the writer of individuals who have had extensive homosexual experiences over a number of years who have been able to marry and have children and make a satisfactory adjustment to home life. However, there still remains a considerable number of pronounced homosexuals who find it impossible to make that adjustment. Those who counsel homosexuals must, therefore, be reasonably sure that the individual has matured enough in his love life to make marriage a desirable and satisfactory adjustment.

There are few classes of individuals in the community who are more in need of mental hygiene guidance than those with varying degrees of homosexual tendencies. While it is true that we must await further research in order to understand at all adequately the causes and treatment of homosexuality, physicians, psychologists, social workers and clergymen must, in the meantime, make use of all available mental hygiene knowledge and techniques to help this not inconsiderable number of individuals to give their best to the world and to know the deep satisfaction of a life richly and fully lived.

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THE TREATMENT OF ACUTELY INTOXICATED ALCOHOLICS*

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THE hospitalized alcoholic often presents many problems of management resulting from his intoxication, his craving for alcohol, and his inability to relax or sleep without large doses of sedative. With rest and sedative as the only treatment, withdrawal of alcohol often results in excessive nervousness, "shakes", vomiting, insomnia, or even more severe sequelæ. These consequences of the withdrawal of alcohol hamper the early discernment of the methods to be used in helping the patient to gain control of his particular drinking problem.

Intravenous administration of insulin, and glucose, in many cases with added vitamins, has been widely used to hasten the recovery of these patients.¹ The reported beneficial effects following this treatment do not appear to be due solely to increased rate of removal of alcohol from the blood.² It does not seem likely that reduced craving for alcohol³ and reduction of symptoms in delirium tremens⁴ can be attributed to more rapid removal of alcohol. It seems hardly possible that the addition of thiamine to insulin and glucose would lower the requirement for sedatives and restore rapidly the appetite for food¹ merely by removing alcohol more rapidly. Some therapeutic mechanism, not explained by the removal of alcohol, appears^{2, 5} to be involved, since similar beneficial effects have been observed when this treatment was instituted after opiate withdrawal in addicts.⁴ This research was undertaken in order to investigate the relationship between the removal of alcohol from the blood and the clinical improvement, brought about by insulin and glucose alone or with added thiamine and nicotinamide. Some observations were also made on the immediate effects of treatment on liver function.

Method.—Patients showing, on initial examination, heart disease, inaccessible veins or a grossly disturbed mental state, were excluded from this study. Apart from these, the intox-

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† Medical Director of Shadowbrook Health Foundation.

cated patients admitted received one of the following treatments in random order: (1) Insulin (30 to 50 units regular insulin, depending on age, weight and body build*), 150 mgm. thiamine, 150 mgm. nicotinamide, made up to 50 ml. with 50% glucose; (2) insulin and glucose (as above) without the two vitamins; (3) thiamine and nicotinamide (as above) in normal saline, without the insulin or glucose; (4) glucose alone; or (5) normal saline.

Two exceptions to a random order were necessary in the first 20 patients, when two refractory patients were given treatment No. 1 when the schedule directed otherwise. Although the results obtained with one of these patients were unsatisfactory, they were included in the series. After a preliminary assessment of results, treatments (3) and (4) were dropped from the series. A further 15 patients were then studied, using treatments (1), (2) and (5) in random order.

The first blood sample was drawn from these patients two hours after admission; this waiting period allowed time for removal of most of the alcohol from the stomach and an approach to equilibrium between blood and tissue concentrations of alcohol.⁷ Following this period, blood was drawn at approximately two hourly intervals for analysis. Treatment was administered after withdrawal of the second sample (*i.e.*, approximately four hours after admission). Measurements[†] were made of the rate of removal of alcohol from the blood before and during treatment.

Assessment of improvement.—Prior to and six hours after treatment, the patients were examined in order to assess the initial and subsequent degrees of intoxication. This was measured by means of both the ordinary and a modified⁸ Romberg test of standing steadiness, steadiness of gait, especially on turning; the time required to sort two decks of cards into four suits; and the time required to subtract 7 from a number between 98 and 102, 7 from the remainder, and so on down to the smallest positive number.

It was also possible to obtain in these patients with a reasonable degree of accuracy, information concerning their craving for alcohol, gastro-

intestinal complaints, tremor, co-operation, relaxation, and sedative required. This information as well as the degree of intoxication was employed in assessing the improvement following treatment. Such information was recorded on a standard form during each examination.

“Craving” was assessed from the patient’s attempts to obtain a “drink” and from his statements regarding his desire for a drink. The “gastro-intestinal complaints” assessed were anorexia, nausea, and vomiting; the occurrence of these symptoms was determined by questioning the patient and the nurse in charge. “Tremor” was assessed from the movements of the fingers of the outstretched hand and “co-operation” of the patients by their attitudes toward the tests for intoxication.

In order to minimize bias in assessing the effects of treatment, the following precautions were adopted: only the physician in charge (R.G.B.) and a nurse (not the nurse in charge of the patient) who helped prepare the treatment, knew which treatment was being given. Since the examiners (H.W.S. and G.L.McB.) assessed the condition of the patient just before and six hours after treatment was administered, insulin reactions and other clues could not indicate the type of treatment given. Six hours after treatment was chosen as a time for reassessment, since it was expected, justifiably as it turned out, that the controls (treated with saline or glucose) would not be manageable for longer periods.

Scoring.—“Intoxication”, “craving”, “gastro-intestinal complaints”, “tremor” and “lack of co-operation” were scored on a four-point scale (*e.g.*, 0 = absent; 1 = slight, 2 = moderate and 3 = striking). Improvement in these factors was recorded as the numerical difference between the “initial” and “final” examination scores. This numerical difference gave an improvement score for each of these factors of 0, 1, 2 or 3, which indicated respectively no, slight, moderate or striking improvement. A negative value resulted when deterioration occurred, as was often the case with “tremor”.

In addition to these factors, “relaxation” was scored on a four-point scale according to how many hours the patient slept or rested during the first six hours after treatment. A high score (*i.e.*, a long rest) was indicative of improvement in the patient. Also, the amount of sedative was graded; 3 grains of sodium amytal

* Detailed considerations regarding the dose of insulin employed will be discussed by one of us (R.G.B.) in a separate communication.⁶

† The method used for determination of alcohol was our modification of the Widmark method.

TABLE I.
SUMMARY OF IMPROVEMENT SCORES OBTAINED USING VARIOUS TREATMENTS

No.	Treatment Description	Number treated	"Aggregate" scores		"Impression" scores	
			Individual scores	Mean ± stand. error	Mean ± stand. error	
1	Insulin, glucose, thiamine, nicotinamide	11	12, 9, 4, 11, 3, 7, 7, 1½, 8, 8, 8	7.14 ± 0.97	2.14 ± 0.24	
2	Insulin, glucose	8	3, 6, -3, 6, 8½, 1, 2, -1	2.81 ± 1.37	1.37 ± 0.31	
3	Thiamine, nicotinamide in saline	4	-2, 6, 1, 2	1.75 ± 1.66	0.75 ± 0.48	
4	Glucose	4	-1, 0, -1, -2	-1.00 ± 0.41	0.0	
5	Saline	8	1, -1, 1, 7, 0, -4, -3, 1	0.25 ± 1.18	0.31 ± 0.38	

or equivalent was arbitrarily assumed to be one dose and was scored as minus one. This negative "sedative" score was intended to correct the other scores, since improvement of the patient due to treatment was not discernible from improvement due to the administration of sedative. As far as possible, the administration of sedative was avoided.

In this study, other signs of intoxication were also noted, such as dilation of the pupils, suffusion of the conjunctiva, heterotropia, heterophoria, flushed face, and impairment of speech; these were not included in the scoring since they were difficult to assess.

The scores for all seven factors were added to give an "aggregate" score. The highest possible "aggregate" score, indicative of striking improvement in five factors, no sedative administered, and no increase in tremour after treatment, amounted to 15.

A general "impression" score for improvement was also assigned for each patient. The "impression" score acted as check on the possible distortion of the "aggregate" scores which might have occurred due to the arbitrary selection and weighting of the components of improvement. An "impression" score of 0, 1, 2 or 3 respectively indicated no, slight, moderate or striking improvement after treatment. In general, the scoring and the statistical treatment of these scores follows the method used in the clinical comparison of analgesics.⁹

RESULTS

The "aggregate" scores for each patient are shown in Table I along with the mean "aggregate" score for each treatment. The "impression" scores were similar to these, though lower, and only their mean values are shown in Table I.

In Table II are summarized the statistical comparisons that were made between the mean scores obtained using the various treatments. Significantly higher mean "aggregate" and "impression" scores were obtained with the group given treatment No. 1 (insulin, glucose, thiamine and nicotinamide) than with those given any of the other treatments. When the improvement scores obtained for those given treatment No. 2 (insulin and glucose) were compared with the corresponding scores for the controls treated with saline (No. 5), only the "impression" score indicated significant improvement. The results also indicated that thiamine and nicotinamide in saline, glucose alone, and saline alone, were not effective treatments.

Investigation of the factors concerned in improvement.—One of the factors possibly concerned in improvement would appear to be an increase in rate of removal of alcohol during treatment with insulin, glucose and vitamins.² When measurements of the rate of removal of alcohol have been made, a problem arises as to

TABLE II.
SIGNIFICANCE OF DIFFERENCES BETWEEN IMPROVEMENT SCORES

Treatments compared	Improvement scores compared	"t"	P
1 with 5	"Impression"	4.8	0.01*
1 with 5	"Aggregate"	4.5	0.01*
1 with 2	"Impression"	2.7	0.02*
1 with 2	"Aggregate"	2.6	0.02*
2 with 5	"Impression"	2.2	0.05*
2 with 5	"Aggregate"	1.4	0.10

*Significant.

how best to present the results, since the relationship between the rate of removal of alcohol from the blood and its concentration in the blood has been the subject of debate by various workers in this field.^{7,10}

On one hand, the removal of alcohol from the blood can be expressed as the percentage of the amount present which is removed in unit time. Our data indicated that the rate of removal of alcohol from the blood, expressed in this manner, tended to increase with decreasing concentration, so that at low blood concentrations (e.g., 100 mgm. per 100 ml.) the rate of removal in the untreated alcoholic may appear to be high (e.g., 30% of the amount present per hour). On the other hand, the removal of alcohol from the blood may be expressed as a decrease in concentration (e.g., mgm. per 100 ml. per unit time). The rate of removal expressed in this manner appears to decrease

tion the "aggregate" scores and a "breakdown" of some of the factors contributing to the "aggregate" scores are shown in Table III.

The change in rate of removal of alcohol in individual patients in this series was not significantly correlated with their respective "aggregate" improvement scores; nor were the average changes in rate of removal of alcohol for the various groups significantly correlated with their respective average "aggregate" scores.

The scores for separate factors concerned in the "aggregate" scores shown in Table III, when added for each treatment, give totals which in most cases exceed the respective "aggregate" scores. This indicates that of the three other factors also assessed, but not shown in Table III, "tremor" and "sedative", resulted in negative values which, when combined, exceeded the positive values usually observed for "co-operation".

TABLE III.
ANALYSIS OF FACTORS INVOLVED IN IMPROVEMENT

Treatment	Rate of removal of alcohol from the blood. Mg./100 ml./hr.			"Aggregate" score	Average improvement scores for separate factors			
	Before treatment	Change during treatment \pm S.E.	Gastro-intest.		Craving	Relaxation		
1	21.9	4.4 \pm 3.4	7.14	1.8	1.2*	2.4*	2.0*	
2	24.6	2.2 \pm 3.6	2.81	1.3	0.7	1.1†	1.5	
3	25.6	-2.8 \pm 5.5	1.75	1.6	0.0	0.8	0.3	
4	23.0	1.4 \pm 4.8	-1.00	1.3	-1.0	0.0	0.3	
5	27.2	-2.6 \pm 4.4	0.25	1.4	-0.6	1.0	0.4	

*Significant (P less than 0.01) difference between treatment No. 1 and treatment No. 5.

†Significant (P between 0.02 and 0.05) difference between treatment No. 1 and treatment No. 2.

slightly with decreasing concentrations in the untreated alcoholic.

Neither of the preceding methods of expression are entirely satisfactory. However, the blood alcohol data obtained in this series, when expressed by either of the foregoing methods, indicated that the change in rate of removal of alcohol after treatments using insulin and glucose was not significantly different from the change in rate noted in the controls given saline. Nor were the average blood alcohol concentrations (approximately 200 mgm. per 100 ml.) significantly different in the groups studied.

In Table III are shown the average rate of removal of alcohol from the blood (mgm. per 100 ml. per hour) before treatment and the average change in this rate (\pm standard error of the change) during each treatment. In addi-

The data concerning the factors in improvement not shown in Table III indicated the same general trend observable in the scores for "gastro-intestinal complaints", "relaxation", and "craving". For example, "tremor" was less marked after treatment with insulin, glucose, thiamine and nicotinamide (treatment No. 1). Sedative was used on 13 occasions in this series; only on two of these occasions had the patient been given treatment No. 1. Similarly, "co-operation" was more markedly improved when treatment No. 1 was given.

The average improvement scores for "intoxication" shown in Table III were not significantly different for the groups studied. Most of the patients were moderately intoxicated when examined prior to treatment and fairly sober six hours later.

The improvement in each of the scores for "gastro-intestinal complaints" (G.I.), "craving", and "relaxation", shown in Table III for the patients who received treatment No. 1 was significantly greater (p less than 0.01) than for those given saline.

Liver function studies.—"Improvement in liver function" has been postulated as a possible beneficial result of treatment with insulin and glucose (with or without vitamins).²

In this series liver function was studied in 10 patients. This study did not indicate any improvement in the liver function tests measured and compared before, and 12 hours after, treatment with insulin, glucose, thiamine and nicotinamide. The liver function tests used were bromsulphalein retention,¹¹ thymol turbidity,¹² minute and total bilirubin tests.^{13, 14} The average total-bilirubin values were significantly increased (from 0.7 to 1.3 mgm. per 100 ml., p less than 0.01) after treatment, while the minute bilirubin values were unchanged. This probably indicates some increased destruction of erythrocytes, which may have been due to the 50% glucose solution used intravenously. Thus, the beneficial effects of treatment noted in these patients do not appear to be associated with any immediate improvement in liver function as measured by these tests.

DISCUSSION

In this series, treatments using insulin and glucose did not significantly increase the average rate of removal of alcohol from the blood. However, an increase was apparent in some patients in this series, and a similar increase was significant in a larger group of patients studied earlier. In this earlier study, 21 patients treated with insulin and glucose, in amounts similar to those used in this study, and 2 ml. "betalin" (Lilly) had an average increase in rate of removal of alcohol ($+ 6.9 \pm 2.0$ mgm. per 100 ml. per hour) which was significantly greater than in seven untreated controls ($- 3.7 \pm 3.1$ mgm. per 100 ml. per hour). This increase in rate did not approach the striking increase observed by Goldfarb⁵ during treatment with insulin and glucose. He measured the removal of alcohol from the blood during the *first* two hours after admission to hospital, while in both of our series we measured and compared the rate of removal of alcohol during the *second* two hours after admission to hospital with the rate during the *third* two hours during

treatment. Furthermore, our patients had lower concentrations of alcohol in their blood (approximately 200 mgm. per 100 ml.) than did his (approximately 400 mgm. per 100 ml.). These differences may explain the observed difference in effect of insulin and glucose on the rate of removal of alcohol. Nevertheless, our findings in agreement with his⁵ indicate that treatment with insulin and glucose, enhanced by thiamine and nicotinamide, is not directed toward the removal of alcohol *per se*.

It may be reasoned that symptoms of "withdrawal of alcohol would occur earlier if increased rate of removal of alcohol were the main effect of this treatment. Our findings in these patients indicate that this treatment is primarily directed towards alleviation of the alcohol "withdrawal" symptoms (e.g., craving, gastro-intestinal complaints, tremor, and inability to relax).

SUMMARY

In this investigation of 35 alcoholics, improvement six hours after treatment was systematically scored and measurements were made of the rate of removal of alcohol from their blood. The improvement, noted after treatment with insulin and glucose, was enhanced when thiamine and nicotinamide were added to the intravenous infusions administered to 11 of these patients. Employing this method of evaluation of improvement, intravenous treatments consisting of thiamine and nicotinamide in saline, glucose alone, or saline alone, were not effective.

There were no significant changes in rate of removal of alcohol from the blood of the groups given the various treatments.

The symptoms improved by treatment (e.g., craving, gastro-intestinal complaints) with insulin, glucose, thiamine and nicotinamide appeared to be those which ordinarily ensue when alcohol is withdrawn and no treatment was administered. Consequently this treatment did not appear to be primarily directed toward removal of alcohol but toward alleviation of the alcohol "withdrawal" symptoms in the patients studied.

The authors are indebted to Drs. J. K. W. Ferguson and G. H. W. Lucas for their many constructive comments throughout the study and regarding this paper. Thanks are also due to the nursing staff at Shadowbrook Health Foundation, especially to Mrs. M. Epp, Head Nurse. We commend the technical excellence achieved by Mr. J. B. West, who analyzed the blood samples for alcohol.

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ORAL PENICILLIN PROPHYLAXIS IN RHEUMATIC FEVER PATIENTS*

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MANY authors have demonstrated the effect of penicillin on the streptococci in the throat. If ordinary therapeutic levels are maintained in the blood for a week, by intramuscular injection, in most cases the beta haemolytic streptococci disappear from the upper respiratory tract. That this occurs with a good deal of regularity is probably due to the fact that haemolytic streptococcus is more sensitive to penicillin than many other micro-organisms. Previous studies have shown that oral penicillin will also rid the throat of haemolytic streptococci in a large percentage of instances.

Markowitz and Kuttner showed that penicillin blood levels effective against the haemolytic streptococcus, could be obtained with a dose of 50,000 units by mouth, twice daily, provided it was given on an empty stomach. Lapin gave prophylactic oral penicillin, 50,000 units before breakfast, and 50,000 units before supper, to a group of 148 children over a twelve-months' period and noted that there were twice as many colds during the twelve

months preceding as there were during the penicillin therapy.

More recently, Kohn and co-workers reported an interesting study on known rheumatic children attending special school. They were given 800,000 units of oral penicillin daily, in divided doses, for one week out of each month. On this schedule there were no rheumatic recurrences over the course of a year. In most months, during their study, no haemolytic streptococci were found in the throats of the children, but during the month of February, 14% showed positive throat cultures in spite of the fact that they were receiving penicillin for one week during that month.

Since sulfadiazine had proved a useful prophylactic measure in preventing streptococcal infections of the throat, and in keeping down the rheumatic fever recurrences, it was inevitable that penicillin prophylaxis should be studied in the same manner. Penicillin seemed to offer certain advantages over sulfadiazine, in that it usually rid the throat of haemolytic streptococci in a relatively short period and was less toxic. It was therefore decided to study a group of rheumatic patients, being followed in the cardiac clinic at the Hospital for Sick Children, and note; (1) the occurrence of haemolytic streptococci in repeated throat cultures; (2) the number of upper respiratory infections and, (3) the appearance of rheumatic recurrences.

In the fall of 1946, approximately 80 rheumatic fever patients were attending the cardiac clinic. These were divided into two groups by placing patients alternately in control and in penicillin groups. Eventually there were 38 children in each group and these two groups were comparable in all respects. The average age, in both groups, was slightly over eleven years. There were approximately the same number of boys and girls in each group, and the average duration of the rheumatic disease was approximately the same in each group, being slightly over three years from the time of onset. Those in the penicillin treated group were instructed to take a 50,000 unit oral penicillin tablet, one-half hour before breakfast, and three to four hours after their supper, each day. They were given enough penicillin to last for a month and instructed to return at that time for further checkup. At each visit the

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The oral penicillin used in this study was provided by Ayerst, McKenna and Harrison, and by the Connaught Laboratories, University of Toronto.

patients of both groups were subjected to similar examinations. Careful history was taken regarding upper respiratory infections and rheumatic symptoms, nose and throat were examined for evidence of infection and a throat culture taken. The state of the heart for size and murmur was checked at each visit. Monthly sedimentation rates were done on each patient. Heart x-rays were taken twice yearly, and an electrocardiogram at least once a year. No penicillin was given during the summer months, July, August and September. The investigations were carried out through two winter seasons 1946 to 1947 and 1947 to 1948.

At the beginning of the study Dr. Freda Fraser of the Connaught laboratories examined the blood of ten children following the administration of a single dose of 50,000 units of oral penicillin. Blood levels noted were of the same order as those found by Markowitz and Kuttner but at a slightly lower level. One hour after the administration of the penicillin, the average blood level was 0.11 units per c.c., two hours after penicillin the blood level was 0.035 units per c.c., and three hours after was less than 0.025 units per c.c.

RESULTS

During the course of the two years of study there were approximately 1,200 throat swabs taken, 576 in the control group and 570 in the penicillin treated group. Fig. 1 shows the number of throat swabs positive for haemolytic streptococci, group A, in each group. It will be noted that there were 52 positive cultures in the control group, and 3 positive cultures in the penicillin treated group. In the penicillin group, the 3 positive cultures occurred in three different patients and obviously only on one occasion in each. In the control group, a number of children showed positive cultures for haemolytic streptococci on two or more occasions.

When the positive cultures for group A haemolytic streptococci were considered according to

the month they appeared, it was noted that there was a gradual rise in the number positive during the fall and early winter, reaching a peak in March. The prevalence then gradually fell

OCCURRENCE OF B. HEMOLYTIC STREPTOCOCCI IN CONTROL AND PENICILLIN GROUPS

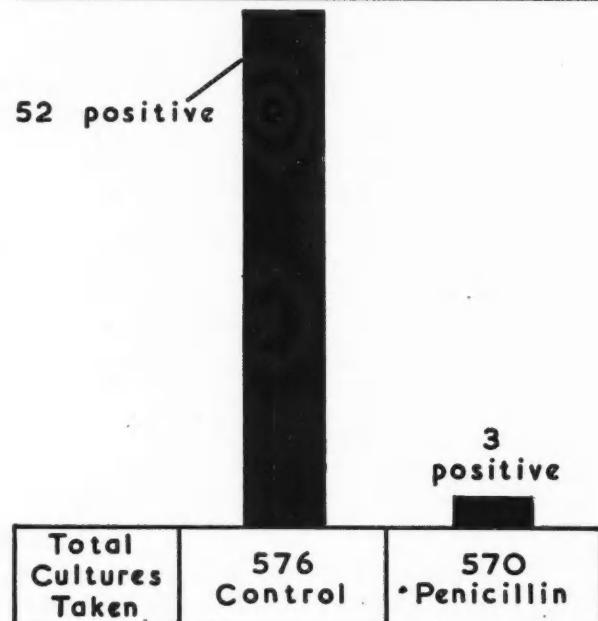


Figure 1.

again as summer approached. Among the 3 positive cultures in the penicillin treated group, one occurred in January and two in March. These findings are summarized in Table I.

In Table II, the number of upper respiratory infections during the two years, in the two groups, is recorded, and it will be noted that there were 158 colds in the control patients, and 151 in the penicillin treated cases.

Out of the 76 rheumatic patients followed for two years, there were 9 rheumatic recurrences, 6 occurred in the control group, and 3 in the penicillin treated group. A summary of these findings is shown in Table III. In the control group, among the 6 recurrences, there were two

TABLE I.
THROAT CULTURES POSITIVE FOR B. HEMOLYTIC STREPTOCOCCI

	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June	Total
Control 38 patients.....	1	4	5	8	5	16	8	3	2	52
Penicillin 38 patients.....					1 (a)	2 (b, c)				3
Total 76 patients.....	1	4	5	9	5	18	8	3	2	55

(a) Penicillin regularly for 3 months. (b) Penicillin fairly regularly. (c) No penicillin for 1 month prior to positive culture.

TABLE II.
OCCURRENCE OF UPPER RESPIRATORY INFECTIONS IN 76 PATIENTS FOLLOWED 20 MONTHS

No. colds	No. colds	No. colds per person	Patients with Hæm. Strep.
Control, 38 patients....	158	4.2	16
Penicillin, 38 patients..	151	4.0	3

patients that showed haemolytic streptococci in their throat at the time of the recurrence, but one of these had no rise in the anti-streptolysin titre. Three showed an elevated anti-streptolysin titre, and two of these had no haemolytic streptococci in the throat. The patient who had frequent positive cultures for haemolytic streptococci also had a high anti-streptolysin titre and frequent upper respiratory infections during the course of the study. In the penicillin treated group, among the 3 recurrences, none had haemolytic streptococci in their throats but all 3 of them had elevated anti-streptolysin titre.

COMMENT

In our experience with prophylactic oral penicillin over two winters, haemolytic streptococci can be largely eliminated from the throat by the small dose of 50,000 units twice a day. During the period of study there were no epidemics of streptococcal infections in the vicinity, so that ridding the throats of haemolytic streptococci did not have much practical significance. However, at times when epidemics of scarlet fever and

streptococcal sore throats are rife, this method would offer a useful safeguard to a community of children. The applicability of this method increases as the price of oral penicillin comes down.

Actually there were a fair number of upper respiratory infections during the period of our study, but they were not associated with haemolytic streptococci in the throat and were presumably virus in origin. We found approximately the same number of colds in both groups. This is, of course, the result one might expect in the absence of an epidemic of streptococcal infection.

There were approximately 12% of the whole group of rheumatic patients that had recurrences during the two winters in which the study was conducted, 6 of them were in the control group, and 3 in the penicillin treated group. Thus it would appear as if the penicillin had had some prophylactic effect in the treated group. However, the findings were not conclusive since we found several rheumatic recurrences in the control group without any evidence of haemolytic streptococcal infection. In the penicillin group, the three patients who did have rheumatic recurrences had no streptococci in the throat at the time, but did show significant elevations in their anti-streptolysin titre, so presumably the streptococci had come and gone between our monthly throat swabs.

TABLE III.
RECURRENCES OF RHEUMATIC FEVER IN 76 PATIENTS FOLLOWED 20 MONTHS

No.	Diagnosis	Hæm. Strep. isolated	Anti Strep. titre 250 or more	Upper respiratory infections
Control 6.....	Chorea	0	300	0
	Chorea	0	<250	3
	Carditis	4 times	600	5 persistent
	Polyarthritis	0	600	3
	Progressive carditis, mitral stenosis	0	<250	4
	Progressive carditis, mitral stenosis, aortic regurgitation and insufficiency	1	<250	5
Penicillin 3.....	Carditis	0	500	2
	Carditis	0	1000	3
	Pericarditis	0	500	1 sore throat

The numbers involved in rheumatic recurrences were not large enough to draw clear-cut conclusions. One can only say that there was some suggestive evidence that the recurrences were less frequent in the children receiving penicillin. The most conclusive part of the investigation was the almost complete elimination of beta haemolytic streptococci from the throats of the children receiving the prophylactic doses of oral penicillin. Probably the most practical application of this method of prophylaxis would be during epidemics in institutions for children, or in service life, where groups are massed together and spread of haemolytic streptococcal infection is frequently easy.

With only three positive cultures in the penicillin treated group it was obviously impossible to study change in sensitivity of the micro-organisms to penicillin. It had been planned to study the streptococcus in this way, and in the group that had no penicillin where the same micro-organism was found more than once in the same patient, there was no evidence of change in sensitivity over the months.

It is worthy of note that there were no rashes or evidence of allergic reaction to the oral penicillin.

The authors are indebted to Dr. Freda Fraser both for her helpful advice when initiating the study and for the blood level estimations after trial doses of penicillin. Appreciation is also expressed to Dr. E. T. Bynoe for his generous assistance.

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RÉSUMÉ

La pénicilline orale à 50,000 unités b.i.d. pendant les mois d'hiver suffit dans la grande majorité des cas à éliminer le streptocoque hémolytique dans les cultures de gorge. Ce fait pourra avoir une haute importance dans les périodes d'épidémie de fièvre scarlatine et de mal de gorge causés par le streptocoque hémolytique.

Dans l'étude qui est présentée ici les auteurs ont trouvé qu'environ 12% des patients souffrant de rhumatisme ont fait des rechutes pendant les deux hivers qui ont servi aux expériences. Trois recevaient de la pénicilline et six n'en recevaient pas. Cependant parmi ces six patients aucun ne présentait des signes évidents d'infection à streptocoque tout en ayant des taux d'antistreptolysine augmentés. Cette étude ne porte pas sur un nombre assez grand de patients pour conclure avec certitude. L'emploi de la pénicilline orale prophylactique a sa place pendant les épidémies ou pour aider à les prévenir.

YVES PRÉVOST

MEDICAL ASPECTS OF BONE DISEASE WITH PARTICULAR REFERENCE TO OSTEOPOROSIS*

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THE specific metabolic derangements which result in generalized rarefaction of bone will be considered first. Then attention will be directed to one of these disorders, osteoporosis, of which several clinical types will be described. Finally detailed histories of cases of post-menopausal osteoporosis will be presented, and these illustrate satisfactory clinical improvement following therapy.

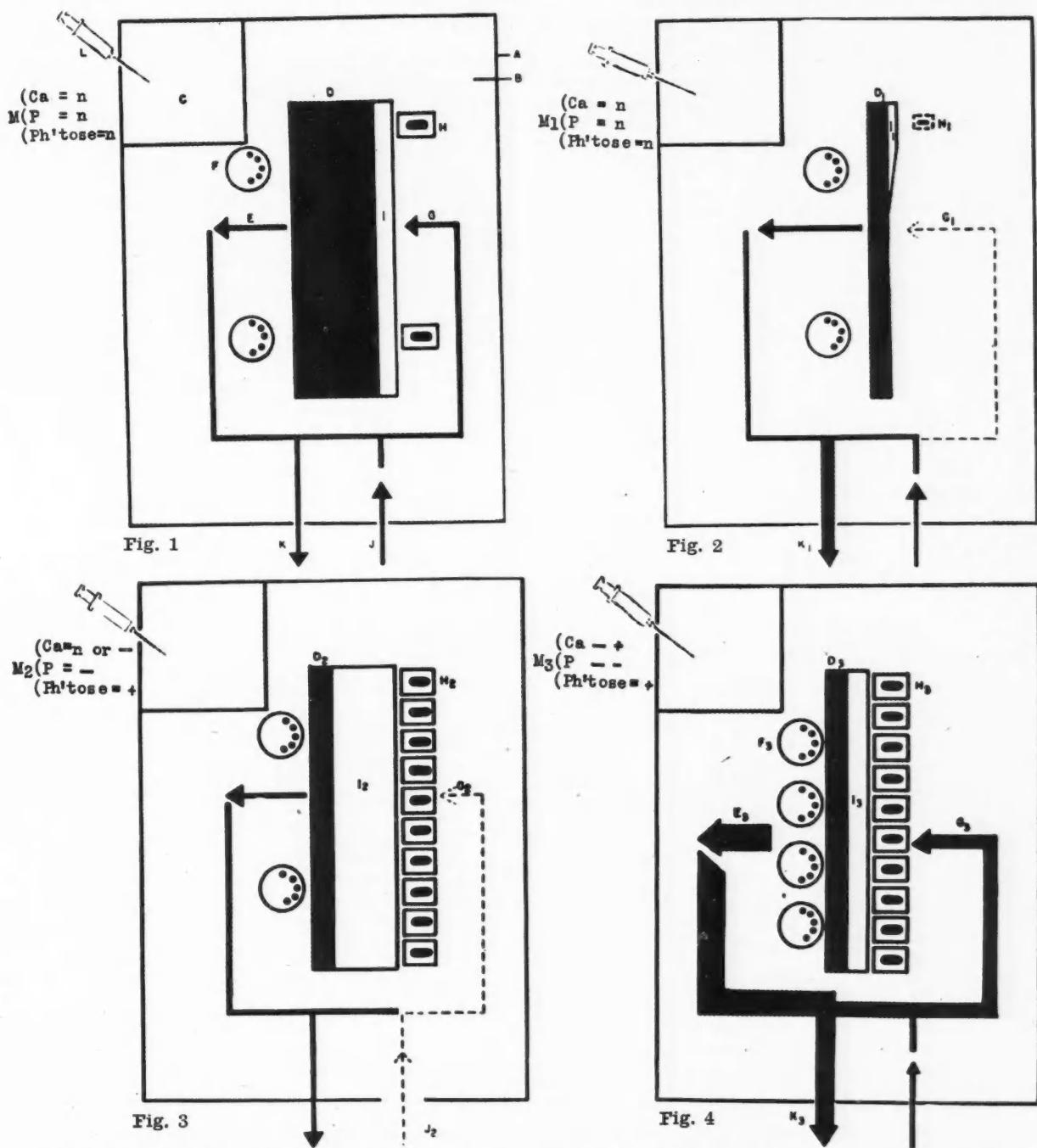
METABOLIC FACTORS IN RAREFACTION OF BONE

Bone diseases associated with rarefaction are divided into two large groups, generalized and localized. The generalized conditions may involve certain parts of the body to a greater or lesser degree, but nevertheless there is a common process throughout the skeleton. Localized disorders are distinguished by the fact that some areas of bone remain entirely normal even though the lesions may be widespread. This latter group, which will not be considered here, includes metastatic malignancy, multiple myeloma, leukæmia, sarcoidosis, Gaucher's disease, osteitis deformans (Paget's disease) and polyostotic fibrous dysplasia (Albright's syndrome).

The three metabolic conditions which lead to generalized rarefaction are osteoporosis, osteomalacia, and osteitis fibrosa generalisata. However, before describing their specific metabolic disturbances let us consider normal bone. Bone consists of an organic protein matrix laid down by osteoblasts, and an inorganic calcium-phosphate-carbonate complex precipitated from the serum into the matrix. At some points and at some times the calcium complex is being deposited on the matrix, whereas, simultaneously, at other areas and times the calcium is being resorbed, often in the presence of large bone cells, osteoclasts. In this sense Albright and his co-workers^{1 to 6} have depicted bone with two active metabolic surfaces (see Fig. 1).

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Figs. 1 to 4.—Schematic diagrams to show the conception of differences between normal, osteoporosis, osteomalacia and hyperparathyroidism with osteitis fibrosa generalisata. (A) Body limits; (B) body fluid; (C) body serum, a compartment of body fluid easy to tap for analysis; (D) bone mass with two surfaces, one where bone is being resorbed and one where it is being laid down; (E) arrow indicating by its size rate of Ca and P resorption; (F) osteoclast; (G) rate of Ca and P deposition; (H) osteoblast laying down osteoid (I); (J) Ca and P entering body from gastro-intestinal tract; (K) Ca and P leaving body by kidney or other exits; (L) syringe obtaining serum for analysis; (M) blood values (n, normal; +, high; -, low). (From Albright, Bloomberg and Smith, 1940).

Fig. 1.—Normal: Note that Ca and P going into bone equals that coming out of bone; part of what comes out goes back in. **Fig. 2.—Osteoporosis:** Note decrease in bone mass (D₁); primary hypoplasia of osteoblasts (H₁); decreased deposition of osteoid (I₁); decreased Ca and P deposition (G₁); increased Ca and P excretion (K₁); and normal blood values (M₁). **Fig. 3.—Osteomalacia:** Note decreased bone mass (D₂); hyperplasia of osteoblasts because of increased stresses and strains (H₂); increased deposition of osteoid which is inadequately calcified because of serum Ca and P values; decreased Ca and P deposition (G₂); primary difficulty in absorbing Ca and P from gastro-intestinal tract (J₂); and abnormal blood values (Ca normal or low, P low, phosphatase high). **Fig. 4.—Osteitis fibrosa generalisata complicating hyperparathyroidism:** Note increased Ca and P excretion in urine (K₃); increased Ca and P resorption (E₃); increase of osteoclasts (F₃); decreased bone mass (D₃); increased bone formation by osteoblasts (I₃) because of increased stresses and strains; increased Ca and P deposition (G₃) because serum is not undersaturated in respect to calcium phosphate (i.e., serum Ca is sufficiently high to almost offset low serum P); and high phosphatase level (M₃).

First, osteoporosis is a disorder in which too little bony matrix is being formed but calcium metabolism and bone resorption are normal (see Fig. 2). The osseous tissue appears of normal character in histological sections, although the spicules are unusually thin and the lacunæ unusually wide. As the osteocytes are not increased in numbers and are not engaged in rapid deposition or resorption of calcium phosphate, the serum alkaline phosphatase level is not high. Secondly, in osteomalacia the primary disturbance is inadequate deposition of the calcium complex, while the response to increased stresses and strains on the weakened skeleton is manifested by an abundant formation of uncalcified nitrogenous matrix (see Fig. 3). Histological specimens demonstrate wide borders of pale eosinophilic uncalcified tissue (osteoid seams) at the surface of the spicules.

(b) secondarily to renal glomerular failure with phosphate retention, so-called renal rickets. The characteristic biochemical findings in these conditions have been tabulated (see Table I).

OSTEOPOROSIS: CLASSIFICATION

Albright and Reifenstein⁶ tabulated twelve sub-types of osteoporosis. The list includes osteoporosis occurring in the following: osteogenesis imperfecta, acromegaly, hypovitaminosis C, and malnutrition with protein insufficiency. Also in young well-nourished adults there are rare cases of osteoporosis which can only be called "idiopathic". The remaining seven sub-types have been consolidated into four, of which the causes are disuse, hypercorticism, senescence, and gonadal insufficiency.

TABLE I.
BIOCHEMICAL CHARACTERISTICS OF CERTAIN METABOLIC BONE DISEASES

	Urine calcium	Serum calcium	Serum phosphorus	Serum Alk. P'se.
1. Osteoporosis.....	N	N	N	N
2. Osteomalacia				
(a) Low calcium absorption.....	L	L or N	L	H
(b) Hypercalcuria.....	H	L or N	L	H
3. Osteitis fibrosa generalisata				
(a) Hyperparathyroidism.....	H	H	L	H
(b) Renal glomerular failure.....	H	L	H	H

N—normal; L—low; H—high. The most noteworthy features are italicized.

The enhanced activity of the osteocytes in calcium-phosphate metabolism, is associated with an elevated level of alkaline phosphatase in the blood serum. Thirdly, osteitis fibrosa generalisata is a disorder characterized by excessive bone resorption associated with compensatory hyperactivity in new bone formation (see Fig. 4). Biopsies reveal numerous cells, osteoclasts and osteoblasts, in wide lacunæ, but the spicules, though thin, are of normal histological pattern. The serum alkaline phosphatase level is elevated, and the serum calcium and phosphorus levels are abnormal.

There are two main sub-groups of osteomalacia; (a) conditions in which there is deficient calcium absorption by the intestines, e.g., infantile rickets, famine osteomalacia, steatorrhœa; and (b) various renal tubular deficiencies associated with hypercalcuria. Also, osteitis fibrosa generalisata may be found either (a) in primary hyperparathyroidism or

(a) *Atrophy of disuse*.—Probably the best known example of osteoporosis is the atrophy of disuse which follows immobilization or paralysis. As the normal stimulus of stresses and strains for adequate osteoblastic activity is not present, new bone formation is diminished over wide areas. Thus, it is worth noting, the excessive quantity of calcium released by normal bone resorption may lead to renal calculi. These are even more likely to occur if calcium and vitamin D are prescribed in the erroneous belief that calcification of fractured bones would be accelerated.

(b) *Hypercorticoidism*.—A second example of osteoporosis is found in Cushing's syndrome. The fundamental endocrine imbalance in this syndrome is hypersecretion of adreno-cortical hormones with gluconeogenic activity. A metabolically similar state occurs in the "alarm reaction" of Selye,^{7,8} which follows trauma, surgical operations, or other injurious condi-

tions. An earlier hypothesis formed by Albright⁷ to explain the osteoporosis was as follows: the increased gluconeogenesis leads to excessive protein breakdown in the liver and, in the face of this demand, the body has inadequate reserves for simultaneous protein anabolism in other tissues such as skin, muscle and bone. Hence new bone formation is diminished and this is osteoporosis. More recent metabolic studies with ACTH (adreno-cortico-trophic hormone) have led Albright⁵ to offer an alternative hypothesis, namely, that this type of adreno-cortical hormone directly inhibits osteoblasts.

(c) *Senescence*.—Thirdly, senescence is accompanied by diminished protein anabolism in all tissues including bone. Thus, osteoporosis is relatively common in both sexes after the age of 70 years, so-called "senile osteoporosis". It is probable that deficiency of the secretion of oestrogens or androgens by the gonads is a contributing factor and that hyposecretion of adrenal androgens also is important. Certainly the excretion of urinary 17-ketosteroids, which are metabolites of the adrenal cortex and of the testis, is relatively low in very elderly people. In addition at this age there are presumably non-endocrine factors, such as a decreased metabolism of all cells including the osteoblasts, low ingestion of protein, and, thirdly, decreased physical activity resulting in disuse atrophy. Black, Ghormley and Camp⁹ studied 167 women and 41 men with senile osteoporosis, and this 4 to 1 sex ratio suggests that gonadal deficiency, which is relatively rare in men, was probably an important factor in many of their cases. From a clinical viewpoint senile osteoporosis may be considered to be so closely related to "post-menopausal" osteoporosis that similar therapeutic management may be recommended (see Case 2 below).

(d) *Gonadal deficiency*.—The fourth subgroup of osteoporosis is specially characterized by a deficiency of the gonadal secretions. "Post-menopausal osteoporosis" was first reported as an entity by Albright, Bloomberg, and Smith¹ before the Association of American Physicians in 1940. In their recent textbook Albright and Reifenstein⁶ state that this form of osteoporosis is actually a commoner clinical condition than any other metabolic bone disorder. This has been my experience in the relatively few such

cases that I have seen at the Montreal General Hospital in the past two years.

That steroids of the oestrogen and androgen type affected osteogenesis in experimental animals was shown prior to 1940 by various workers. In this regard the author follows the lead of Albright³ by referring the reader to the review article by Gardner and Pfeiffer.¹⁰

In their first series of cases of osteoporosis occurring in patients before the age of 65 years Albright and his co-workers^{1, 2} found that 40 of their 42 patients were females. This is explained by the relatively early age at which gonadal deficiency occurs in women. Furthermore, 10 of the 40 women had had a therapeutic castration. In controlled metabolic studies conducted by this group it was found that treating these women with either oestrogens or androgens alone produced calcium retention, and that, in this regard, combined therapy with oestrogens and androgens gave an enhanced effect.^{1 to 6} For these reasons it was assumed that the syndrome was caused by a failure in gonadal secretion of steroids which physiologically cause stimulation of osteogenesis. In order to stress the relative frequency of this disorder in females with oestrogen deficiency following the climacteric, it has been called "post-menopausal osteoporosis". It is of interest that osteoporosis also occurs in men with eunuchoidism, and in young women with congenital absence of oestrogen secretion (ovarian agenesis), as reported by Albright, Smith and Fraser.¹¹

OSTEOFOROSIS: DISTRIBUTION THROUGHOUT BODY

There is a typical distribution to the affected bones in all generalized types of osteoporosis. The spinal vertebrae and the pelvis are more affected than the extremities and the skull. Thus, collapse of vertebrae with compression of nerve roots is a common complication (see Figs. 5 to 8). However, Reifenstein and Albright have suggested that osteoporosis may be a factor in the tendency to fracture of the upper part of the femur in elderly women, and indicated that there was a favourable effect on healing by oestrogen therapy.⁴ Osteogenesis in the skull may not be influenced by the changes in oestrogen secretion, whereas, in contrast, rarefaction of the whole skull is prominent in osteitis fibrosa and in osteomalacia. Nevertheless the question of a type of osteoporosis affecting the base of the

skull must be borne in mind, as McRae frequently has observed increased radio-translucency in the dorsum sellæ after the age of 45 years in both sexes, but especially in women.¹²

SLOW DEVELOPMENT AND SLOW IMPROVEMENT OF OBJECTIVE FINDINGS

Although osteoporosis probably occurs in all women after the climacteric, the process only attains clinical significance in a small percentage. I believe this proportion, however, is greater than is generally appreciated. The development of a sufficient lesion to permit radiological detection, or to give symptoms of weakness or nerve root pain, requires the passing of many years, probably a decade or more. The time is probably shorter after the complete withdrawal of estrogen secretion following

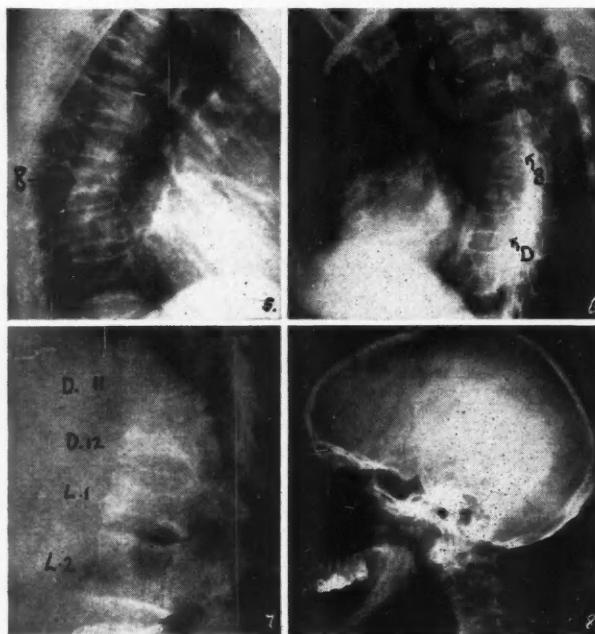


Fig. 5. (Case 1).—Lateral x-ray of dorsal spine before therapy. There is diffuse rarefaction. The height of the body of the eighth dorsal vertebra in particular is decreased. Expansion of intervertebral discs gives the character of "cod-fish" vertebrae but this process is not marked. **Fig. 6.** (Case 1).—Lateral x-ray of dorsal spine taken in November, 1949, after 18 months' therapy. Compare with Fig. 5. There is no significant change in the rarefaction or collapse. The cod-fish vertebrae are more clearly demonstrated in this view. (8, collapsed body of eighth dorsal vertebra; D, an expanding intervertebral disc). **Fig. 7.** (Case 2).—Lateral x-ray of spine showing the reduced height of the bodies of the twelfth dorsal (D.12) and first lumbar (L.1) vertebrae. **Fig. 8.**—X-ray of skull of another female patient, aged 59 years, who was suffering from collapsed spinal vertebrae due to osteoporosis. Note that this skull shows only a slightly greater translucency than that of a normal young adult, and does not show the mottled rarefaction, which is commonly seen in osteitis fibrosa generalisata or osteomalacia. The skull x-ray of Case 1 was similar to the illustration.

castration than after the gradual diminution of ovarian activity in the natural climacteric. At all events it is a slow process. The effect of replacement therapy is likewise slow, particularly as judged by radiological evidence. Reifenstein and Albright⁴ showed that oestrogens or androgens caused a favourable effect on calcium retention within six days and this soon reached a maximum. Their data reveal that this retention is in the order of 0.2 to 0.4 gm. of calcium per day. It is estimated that the normal body of a 70 kg. adult contains 1,750 gm. of calcium.¹³ Almost all the calcium of the body is in bone. If one could make the unsupported assumption that the condition were first clinically manifest when the bones were 50% deficient in calcium the required 875 gm. would only be regained, at the rate indicated above, in approximately 2,900 days, i.e., 8 years. For such reasons one need not be disappointed by the fact that x-rays have not revealed unquestionable improvement in bone density after oestrogen therapy in Albright's¹⁴ experience, although the radio-translucency is at least no worse.

Another finding, which is disappointing at first sight, is that the level of the serum alkaline phosphatase is not significantly elevated after oestrogen and androgen therapy in post-menopausal osteoporosis, although androgen therapy in Cushing's syndrome has been followed by demonstrable elevation of this enzyme.⁴ Apparently the slow rate of calcium retention during therapy in post-menopausal osteoporosis is not associated with sufficiently accelerated deposition or resorption of calcium-phosphate to be reflected in elevated serum alkaline phosphatase.

On the other hand, symptomatic improvement, notably relief of pain in the affected areas, occurs within a few months. Although it has not been proved, there might be a deposition of new nitrogenous osseous tissue which is relatively uncalcified. In the case of nitrogen balance the metabolic studies of Albright and co-workers cited above demonstrated a favourable influence, which was slight with oestrogen therapy and more definite with androgen therapy. Parenthetically, one should recall that the callus formation in ordinary traumatic fractures may have considerable strength before calcification is advanced.

OUTLINE OF THERAPY IN POST-MENOPAUSAL
OSTEOPOROSIS

That endocrine therapy is of considerable clinical benefit in cases of post-menopausal osteoporosis is now widely accepted. For the above-mentioned metabolic considerations, and to avoid the theoretical hazard of carcinogenesis in the uterus or breast, and to minimize side-effects such as uterine bleeding and virilization, probably the best choice is simultaneous therapy with oestrogen and androgen. Dosages recommended are in the range of 1.66 mgm. estradiol benzoate intramuscularly daily or 3 to 15 mgm. diethyl stilboestrol orally daily, and 25 mgm. testosterone propionate intramuscularly weekly or 10 mgm. methyl testosterone orally daily. The diet should contain adequate protein and a normal amount of calcium, but additional calcium and vitamin D therapy are not indicated. When androgens are employed restriction of sodium chloride is necessary to prevent oedema. Every effort should be made to minimize immobilization in rigid appliances, because osteogenesis is stimulated by movement.

CASE REPORTS

Seven cases of osteoporosis in elderly women have come to my attention in the past two years at the Montreal General Hospital. Of these only three have been followed for more than a year and there has been undoubted clinical improvement in two. However the third, a clinic out-patient, who was treated with oestrogen only, has shown little symptomatic improvement, but her complaints have been related to painful ischaemia of the legs rather than to a collapsed osteoporotic vertebra.

A fourth patient has shown symptomatic improvement during three months' observation under full combined therapy with oestrogens and androgens. It is of interest that this woman, a patient of Dr. E. S. Mills, was first prescribed sodium oestrone sulfate (premarin) in doses of about 2.5 mgm. daily in 1942. She improved so that she did not seek further medical supervision for her osteoporosis and she stopped medication in 1945. Back pains, which were originally noted in 1942 at the age of 51 years, recurred during 1949 and necessitated re-admission to the orthopaedic service of Dr. J. G. Shannon.

Three other post-menopausal women have been followed for only a few weeks. In addition to the seven women, one 38-year old man

has been studied and is considered to have the "idiopathic" type of osteoporosis. Histories of the two women who have been followed longest will be given in greater detail.

CASE 1

This woman, aged 65 years, was first admitted in October, 1946, under the care of Dr. J. G. Shannon. Severe pain in the back radiating around the lower chest and generalized weakness had been present since an attack of gripe, for which she had been confined to bed for six weeks in February, 1946. She had had three children and passed through a natural menopause at the age of 47 years in 1929. The first symptom occurred in 1936 when she felt a sharp snapping pain in her back when helping her husband push a stalled automobile. In 1937, after attempting to raise a window, she was laid up for nearly two months with pain referred to the sciatic area. In 1938 a recurrence of backache occurred on lifting a trunk-tray and there were several other minor incidents prior to 1946. One should note that the above injuries were sustained after physical activities commonly undertaken by middle-aged housewives.

In October, 1946, her weight was 124 lb., height 63 in. Blood pressure was 154/82. Urine was negative for albumin and Bence-Jones protein. Basal metabolic rate was minus 1. Blood chemistry findings were as follows: sugar 100 mgm. %; urea nitrogen 36 mgm. %; CO_2 c.p. 43 vol. %; serum protein 7.75 gm. % (albumin 5.65 gm. %; globulin 2.10 gm. %); serum calcium 8.8 mgm. % (normal 9 to 11); serum inorganic phosphorus 3.84 mgm. % (normal 3.0 to 4.5); serum alkaline phosphatase 2 King-Armstrong units (normal 3 to 13). X-rays showed marked translucency of lumbo-dorsal vertebrae with "cod-fish" appearance due to expanding intervertebral discs and collapse of the eighth dorsal and third lumbar vertebral bodies (see Fig. 5). Review of her dietary habits suggested that she had had a low intake of calcium and vitamins for years. Medical treatment consisted of a high calorie, high protein diet, vitamin D 100,000 units daily, and estradiol benzoate 1.66 mgm. daily for 50 days during October and November, 1946. A cast was applied to the dorsal spine and this was worn continually to March, 1947, and then part of each day for a few months. Pain recurred and the cast was re-applied in July, 1947.

In January, 1948, this woman was readmitted by ambulance. She was so incapacitated that she could not walk, sit nor raise herself on to the x-ray table. Roentgenographic studies of the skeleton showed no improvement in the generalized osteoporosis of the spine and several vertebral bodies were obviously narrowed. The pelvis appeared only slightly rarefied, whereas the femur, humerus, clavicle, and skull appeared normal. There was no evidence of opaque renal calculi. Sternal marrow was normal. Blood urea nitrogen was 20 mgm. %, phosphorus 4.1 mgm. %, and alkaline phosphatase 8 King-Armstrong units. The patient was discharged taking calcium gluconate 100 grains three times daily. She continued to wear the plaster body cast constantly but sat up in a chair for about two hours daily until the end of March, 1948, when she was confined to bed complaining of weakness and a pain in the interscapular area.

During April, 1948, this patient first came under my observation. The skin was pale, dry and thin but showed no striae. There was no facial hair and scant axillary hair. Pelvic examination was normal for her age, the mucosæ being purplish, dry and atrophic. The voice was feminine. Since she showed such an advanced stage of post-menopausal osteoporosis and was totally incapacitated as a bedridden patient, it was decided to prescribe both oestrogens and androgens without attempting to avoid virilization. Accordingly, she was given methyl testosterone 25 mgm. orally daily, and stilboestrol 5 mgm. daily. During July, 1948, she was feeling very much

stronger and, though still wearing the cast constantly, sat up in a chair for five hours daily. There was florid acne, a slight beard growth, a deeper voice and a mucoid vaginal discharge. There was no pitting oedema although she had gained 4 lb. in weight. The calcium gluconate was then discontinued, salt intake was restricted, and the methyl testosterone was reduced to 25 mgm. three times weekly. Stilboestrol was continued at 5 mgm. daily. In March, 1949, she was advised to dispense with the cast for a few hours each day. In June, 1949, she could turn herself in bed painlessly without the cast. Axillary hair was profuse and vaginal mucosa was moist and thick. Endocrine therapy was continued with a slight reduction in the methyl testosterone to 25 mgm. twice weekly. During this month she first walked down one flight of stairs to the street, which she had not done for over three years. Occasionally she went for an automobile drive. In September, 1949, she suffered a severe respiratory infection with nausea, and discontinued both hormones for one week. This resulted in transient vaginal bleeding for the first time in twenty years.

In October, she felt well and no longer used the cast. She could now perform the usual light household duties of ladies of her age. There were slight stigmata of virilization. There was no tenderness on pressure over the spine. On November 2, she was able to climb unaided on to the x-ray table. Roentgenograms of the spine showed no improvement by comparison with previous films (see Fig. 6). Serum alkaline phosphatase was still normal rather than elevated (5 King-Armstrong units).

In summary, this woman, aged 67 years when first treated, had been totally incapacitated for more than two years because of vertebral compression due to osteoporosis. Combined androgen and oestrogen therapy was followed by symptomatic improvement within 3 months, and by a return to usual physical activity without mechanical support within about 15 months. Signs of virilization were accepted. No radiological improvement was noted after 18 months of treatment, and the serum alkaline phosphatase had not risen.

CASE 2

This 77-year old woman was admitted in May, 1948, under the care of Drs. F. M. Bourne and J. G. Shannon. She complained of weakness and pain in the back on movement, but was not bedridden. Natural menopause occurred at age 47 years. Blood chemistry findings were within normal limits: urea nitrogen 21 mgm. %; calcium 9.5 mgm. %; phosphorus 3.52 mgm. %; alkaline phosphatase 7 King-Armstrong units. The urine contained 7.3 mgm. of 17 ketosteroids per day, and more than 192 m.u. of gonadotrophins (FSH) per day.¹⁵ X-rays showed generalized translucency of the pelvis and vertebrae with collapse of several vertebral bodies (see Fig. 7). Her initial treatment was high protein, low salt diet, stilboestrol 3 mgm. orally and methyl testosterone 25 mgm. orally each day. In September, 1948, the hormone therapy was interrupted for ten days with resultant vaginal bleeding. Thereafter the stilboestrol was continued at 3 mgm. daily, and methyl testosterone was reduced to 25 mgm. three times weekly. In January, 1949, she felt much stronger and had no backache. Her movements were quite agile for a woman of her age. She used no support other than a standard woman's corset. The clitoris was slightly enlarged and the vaginal mucosa moist. The voice had only a slight huskiness, unnoticed by the patient. Treatment has been continued without further symptoms. X-rays of the spine taken in November, 1949, show no definite change.

Recent values of serum calcium and phosphorus were normal as was the alkaline phosphatase (2 King-Armstrong units).

Whether to classify this case as senile osteoporosis or post-menopausal osteoporosis is a matter of opinion. However, the therapeutic management of the two conditions is similar except that androgen therapy is probably indicated even more in the very elderly than in the somewhat younger age-group.

SUMMARY AND CONCLUSIONS

1. Generalized bone deficiency is due to metabolic processes of three types, namely (a) osteoporosis, where there is inadequate formation of the protein matrix; (b) osteomalacia, where there is lack of calcium for calcification of bone, and (c) osteitis fibrosa generalisata, where there is excessive bone resorption.

2. The various causes and clinical sub-types of osteoporosis are presented. Important among them is deficiency of the gonadal hormones.

3. Post-menopausal osteoporosis, which is the commonest osteopathy encountered in clinical practice, is discussed at some length.

4. Two case histories of this condition are given in detail, and these demonstrate a rapid clinical response to combined oestrogen and androgen therapy.

5. Improvement in the radiological abnormalities has not yet been observed. This is explainable by the slow rate of calcium retention, for eight years would be required to replace a 50% loss of bone calcium.

6. Elevation of serum alkaline phosphatase has likewise not been observed.

7. Nitrogen retention during treatment, which indicates increased protein formation, may account for the symptomatic improvement.

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THE MANAGEMENT OF OBESITY

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OBESITY can be defined as the condition where there is an excess of fat in the tissues. This excess results in an increase of body weight. Many tables of normal weights for height and age are in use by various authorities.¹ Weights 10 to 20% in excess of this are usually considered to represent obesity.

We agree with Campbell,² who after inspection and palpation and a study of weight tables is still inclined to make a diagnosis of obesity on his general clinical impression. The differential diagnosis is rarely a clinical problem, yet the condition must be clearly distinguished from myxœdema, chronic indurations from congestive heart failure, and the lipodystrophies where the distribution of fat is abnormal. As Dercum's disease has not been established as an entity, the term should be discarded. Ellis and Tallerman³ concluded that the distribution of fat was not helpful in the differential diagnosis of obesity.

THE ETIOLOGY OF OBESITY

A review of the literature on obesity reveals increasing evidence that the sole cause of obesity is a caloric intake in excess of body requirements. Earlier beliefs that endocrine dysfunction was frequently the cause of obesity had led to a general acceptance of the classification of obesity into exogenous and endogenous. It is noteworthy that most of the subject matter reviewed comes from workers on the North American continent where the supply of food is well in excess of the recognized normal requirements, and that little recent work on the subject has been done by European workers⁴ where the supply of food has been deficient for the past decade. This suggests that there are few obese patients remaining in Europe upon whom to base observations. In the past some European authors looked upon obesity as a constitutional anomaly, while American authors have emphasized the endocrine dysfunction theory. The change in concept began with Newburgh's⁵ views that there was no specific metabolic abnormality in obesity. Wilder⁶ stated in 1932, "When all is said on the score of the endocrine glands, it leaves one with the impres-

sion that their rôle in the production of obesity has been astonishingly overestimated". Campbell expressed a similar view in ascribing the fundamental cause of obesity to an intake of food in excess of requirements, and expressed doubt that the endocrine glands had a rôle in the development of obesity.

Hochman⁷ suggested in 1938 that mental factors may contribute to the development of obesity. Later Bruch⁸ in comparing 102 obese children with normals found more intensive growth and earlier maturation in the obese group, and concluded that this obesity could not be based on hypothyroidism and hypopituitarism. Later the same author studied physiologic and psychologic aspects of food intake in 142 obese children and concluded that the calorie requirements of obese persons are not different from those of normal persons, and that weight increase is proportional to the increase of food intake. The psychologic studies of 40 mothers and their children showed emotional immaturity in and over-protection attitudes to, the fat children, two-thirds of the group being either an only child or the youngest child in the family. Major psychic traumata and deprivation during the mother's childhood were other factors considered of significance by the author. A further interesting psychologic study of obesity in childhood was reported by Bronstein⁹ and his group. They studied the physical and psychological aspects of 35 obese children drawn from their "Fröhlich syndrome file", and found no ascertainable endocrinologic evidence as a basis for their obesity. While the achievements of this group were not materially different from the average, their mean intelligence was above average. The majority of the group were interested in sedentary activities, such as going to the movies, listening to the radio, and reading, all three of these diversions being of the class enjoyed best in solitude, *i.e.*, away from their fun-poking companions.

In a comprehensive review, Newburg¹⁰ reviewed the hazards of overweight and concluded that beyond the age of forty-five years the penalty of overweight is one-quarter to three-quarters excess in mortality. Like Bruch, he found no evidence of altered metabolism and dismisses the lipophilia theory of Von Bergmann. He feels that the only manner in which endocrine dysfunction can cause obesity is indirectly, which agrees with Greene's findings

that many so-called cases of endocrine obesity are coincidental with an unrelated endocrine disorder. Newburgh concludes that obesity is caused by overeating and states six causes of overeating, namely, (1) inculcation of the habit by an overzealous or misguided mother; (2) the gratification obtained from the flavours of foods; (3) the feeling of repose and comfort produced by the full stomach; (4) the temporary respite from difficulties obtained by indulging in food; (5) an unchanged appetite in persons whose calorie need is lessened through illness; and (6) food habits of youth, when the requirements are greatest are sometimes retained through adult life where requirements are less and thus result in obesity. Gastineau, Rynearson and Irmisch¹¹ in 1949 reported similar findings. These authors, then, stress environment factors rather than inheritance, in the etiology of obesity. Spiegel¹² and Wilder, however, consider obesity may be the indirect result of an endocrine disorder when

psychotherapy. Other methods of treatment mentioned in the literature but not advocated include exercise, endocrine therapy, especially thyroid extract, dinitrophenol, amphetamine sulphate and its dextroisomer dexamphetamine, diuretics, sweat therapy, laxatives, colonic irrigation, and reducing belts. With regard to exercise, Newburgh has calculated that one must walk 36 miles to lose one pound in weight.

With regard to dexamphetamine,¹⁴ while we have not seen any ill effects from its use, we do not advocate it except in rare instances, and then only as a temporary crutch. With regard to the low calorie diet there is general agreement regarding protein and total requirements, and a trend away from the tough or starvation type of diet (see Table I).

Few details of management of obesity were found in the literature. Bruch emphasized that success depended on co-operation of the patient and that an adequate reduction of weight oc-

TABLE I.
LOW CALORIE DIETS

Author	Year	Protein	Fat	Carbohydrates	Average total calories
Evans and Strang, Pittsburgh	1929	60	29	45	681
Dunlop, Edinburgh	1931	66	38	100	1,006
Campbell, Toronto	1936	60	40	100	1,000
Bruch, New York	1940	60	40	150	1,200
Talbot, Harvard (children)	1945	53	20	90	750
Rynearson, Mayo Clinic	1949	60	50	110	1,000
Rodger, McFetridge, and Price, Regina	1950	65-95	45-75	130-225	1,200-2,000

the latter follows a central nervous system disorder which produces pathological appetite through the diencephalon. Talbot¹³ found 95% of obesity in children to be due to overeating and associates the remaining 5% with mental retardation, an expanding intracranial lesion, hypoglycæmia and hypothyroidism. However, in our experience no evidence of etiological factors other than a calorie intake in excess of requirements has been found, with the possible exceptions of the paradoxical weight gain or failure to lose during the first few weeks on a low calorie diet, and a gain in weight of from one to three pounds a few days before menstruation. The retention of fluid has been postulated as an explanation of these anomalies.

MANAGEMENT OF OBESITY

In the light of the above trend of opinion regarding etiology the emphasis of treatment has been placed more on dietary management using a balanced, low calorie diet with coincident

success when the patient co-operated, i.e., attended the clinic regularly and followed the low calorie diet faithfully. Bruch found only 36% of patients co-operative, but of those who attended the clinic voluntarily expressing a desire to lose weight (i.e., not referred) 87.5% co-operated and lost weight. Hunter reported that of 2,447 obese patients in the London Hospital, only 682 (27.5%) attended long enough to be benefited. Of those who went regularly however, 93% were obedient and lost weight. Like Kenyon,¹⁵ we have found that on low calorie diets the rate of weight loss was proportional to the degree of overweight.

PRESENT STUDY

Our present study is in a preliminary phase. We have examined the records of 600 cases of obesity treated with a low calorie diet (1,500 calories) and followed during the last 18 months. The source of these cases is shown in Table II. Of these 205 (34%) were referred

for treatment of obesity alone, while 395 (66%) were referred because obesity was considered a deterrent to the satisfactory treatment of other conditions.

TABLE II.
REASONS FOR REFERRAL OF 600 CASES OF OBESITY

	Number of cases	Percentage
Obesity only	205	34.0
Obesity hindering treatment of other conditions	395	66.0
Gynaecological and obstetrical	216	36.0
Cardiovascular	71	12.0
Surgical	56	9.3
Disorders of metabolism	28	4.7
Osteoarthritis	16	2.7
Dermatological	8	1.3
	600	100.0

Method of management.—Following medical assessment the patient is referred to one of us (E.P.) who interviews the patient, explains the reason for and the nature of the diet, and gives instructions for following it. This also provides the groundwork for ensuing interviews with the patient. An opinion from the patient as to the cause of his obesity often gives a clue to the method of approach. Eating is one of our greatest pleasures as well as a basic human need, and it is understandable that the patient, who has been told that he must modify his whole life in terms of food, is under tension. His behaviour is usually indicative of this anxiety. The willingness of the patient to lose weight; a clear understanding of the need for the weight reduction; and a thorough explanation and instruction of diet principles; all determine the success which can be achieved.

Canada's Food Rules, the dietary standard approved for Canada by the Canadian Council on Nutrition is the scientific basis for planning low calorie diets. To provide more satisfying meals, more bulk or quantity or to adhere to a lower calorie prescription, these basic food rules are usually modified.

For example: (a) Proteins may be increased by using skim milk or low fat buttermilk instead of whole milk, allowing 1 pint of skim milk (1 quart for prenatal patients and children) instead of $\frac{1}{2}$ pint of whole milk. (b) Fruits—3 servings instead of 2—to provide additional bulk. (c) Vegetables—those of low carbohydrate content (3 to 9 gm. per $3\frac{1}{2}$ oz. serving) are permitted as desired. (d) Potatoes.—These are often eliminated, depending on the calorie content ordered, as well as the assurance that the vitamin C requirement will be met by the citrus, tomato or vitaminized apple juice group. (e) Breads and cereals. We have eliminated cereal which is not well taken without sugar and substituted a "protein breakfast" for better staying power. An exception would be where food costs are of prime importance.

The amount of bread is increased or decreased as the calorie prescription indicates, based on the knowledge that with a reduction in calorie intake, the corresponding need for the vitamin B complex becomes less.

The use of a *positive* rather than a *negative* approach to the diet is preferable. *The more normal* the diet can be the better the psychological effect. The less the patient talks and thinks about food, the easier it will be for him to adhere to the diet. After explanation of Canada's Food Rules, it usually becomes obvious to the patient why the non-essentials are in the "avoid" list. This explanation offers the opportunity to correct poor food habits, and dissolve the many food fallacies that abound. Nine problems commonly met in this study are mentioned. (1) The "no breakfast" or "poor breakfast" habit; (2) that brown bread has fewer calories than white; (3) that margarine is inferior to butter; (4) the misuse of mineral oil in the preparation of foods; (5) that honey is a natural sugar and consequently has no calorie value; (6) that melba toast has fewer calories than bread; (7) that water makes them fat; (8) that the odour from cooking makes them fat; (9) that pills or exercise alone will reduce weight.

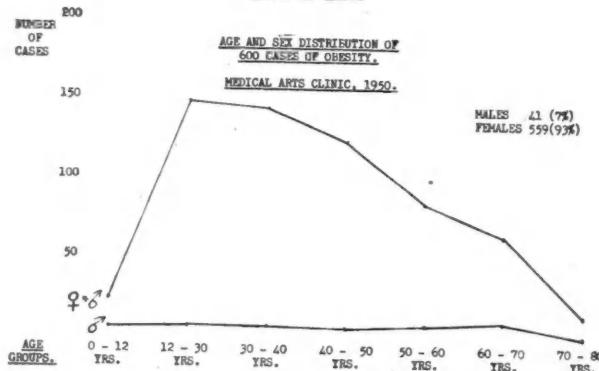
Care is taken to adapt the food allowance of a low calorie diet to the practical aspects of the patient's occupation. For example (1) the food budget (skim milk costs 14 cents a quart; whole milk costs 18 cents a quart); (2) the group who are lunch carriers; (3) those who eat all or just some meals "out", in a city restaurant or as a commercial traveller; (4) the patient whose obesity is complicated by functional dyspepsia, peptic ulcer, gall bladder disease or pregnancy; (5) those who live on farms or isolated small towns, who use the lack of certain foods as their alibi for not staying with diets; and (6) usual family eating habits.

Wherever possible the patient returns for weekly weight checks and adjustment of the diet to new levels, as indicated. At these interviews the encouragement, assurance and further explanation or instruction given by the dietitian, together with the personal interest shown in the patient's welfare by the dietitian are the determining factors in the success or failure of the treatment. The value of this regimen has become more evident both to us and to our patients in the later period of readjustment when the patient is learning to keep his weight normal. When the patient lives at

a distance, contact is held, and morale is strengthened by frequent personal correspondence.

Whether it be listening to the curling triumphs of a shy arteriosclerotic obese man; the eight year old who proudly claims his allowance is now being spent on fresh fruit and comic books rather than on cokes and candies; the young maid reducing with the unconscious motivation of a slender, short boy friend, as well as amenorrhoea; the despondency of a childless wife and the eventual joy of pregnancy (after a substantial weight loss); the trials of a professional chocolate dipper who can't resist them; the thrill of being able to wear a new dress sans girdle for the first time in years; giving the same encouragement through the mails; or trying to pacify those who have been told by well meaning friends that the diet makes them look terrible; the eventual notation "normal weight regained" covers it all.

TABLE III.



RESULTS

Table III shows the age and sex distribution of 600 cases of obesity. The largest number of patients treated were between the ages of 20 and 40, and rather surprisingly 559 (93%) of all patients treated were females. Sufficient time has not yet elapsed to enable us to determine the success of treatment of these 600 cases. We did, however, arbitrarily choose 64 patients who had visited the dietitian ten or

TABLE IV.

RESULTS OF TREATMENT OF 64 PATIENTS
(1,500 CALORIE DIET AND PSYCHOTHERAPY)
MEDICAL ARTS CLINIC, 1950

Number of weeks on diet	1,406.0
Number of pounds lost	1,476.5
Average number of weeks on diet	21.96
Average loss in pounds per patient	23.06
Average loss in pounds per week per patient ..	1.05

more times and analyzed our results. All of these patients have been successful in losing weight.

DISCUSSION

This preliminary study indicates a high percentage of our patients are referred because obesity is having an adverse effect on associated medical or surgical conditions. The degree of success we have so far achieved in this group seems higher than that reported by other workers. These improved results are attributed to the *integration of practical dietetics with practical psychotherapy*. For this reason a detailed description of the dietary management of these patients is given. The high incidence of female patients in this study is noteworthy. One is tempted to speculate whether the female is more inclined than the male to relieve her frustrations and tensions by solace in food. Possibly the male has easier access to other psychological outlets than has the female and again these may be relatively more accessible to him than food. The calorie value of our diet tends to be higher, and the rate of weight loss lower than those previously reported. These trends are intentional. We believe that too rapid weight loss results in the mobilization of depot fat, producing in turn, a high blood cholesterol, which condition is believed to increase the likelihood of vascular accidents.

SUMMARY

1. Past and present concepts in the etiology and management of obesity are reviewed.

2. A method of management of obesity embodying the principles of the low calorie diet with a more detailed program of psychotherapy and follow-up is described.

3. The implications of such a program are stated.

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Medical Arts Clinic.

RÉSUMÉ

L'auteur présente un résumé des connaissances actuelles sur l'étiologie et le traitement de l'obésité puis met en lumière le traitement que lui-même emploie. L'étude porte sur 600 patients référés un service de nutrition soit pour obésité proprement dite (34%) soit parce que l'obésité était considérée comme nuisible au traitement d'une autre affection. Aussitôt l'examen physique et psychique complétés le traitement par une diète est institué. La diète proposée par l'auteur contient plus de calories que les diètes prescrites habituellement, parce qu'il craint qu'une baisse trop rapide du poids amène un taux de cholestérol élevé et possiblement des accidents vasculaires.

L'auteur constate que les résultats surtout chez les patients présentant d'autres affections, sont excellents. Il attribue ces bons résultats au fait d'adjoindre la psychothérapie à la diète. Le % des femmes obèses (93%) qui subissent un traitement est très supérieur à celui des hommes. L'auteur tente d'expliquer ce fait en suggérant que peut-être les femmes seraient plus tentées de chercher dans la nourriture une satisfaction à leurs frustrations.

YVES PRÉVOST

THE TREATMENT OF SYPHILIS*

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AS we look back over the past half century, the treatment of syphilis is brought into sharp focus. The earliest forms of treatment were carried from the New World to the Old and were limited to the use of the Holy Wood, guaiacum and sarsaparilla accompanied by incantations. Treatment by fumigation or mercurial vapours is as old as the disease itself in modern Europe. Mercury continued as the only drug of proved value in the treatment of syphilis for more than 400 years.

Clinical syphilology reached its peak at the close of the 19th century. The decades of the 20th century ushered in great discoveries in syphilology which clarified the clinical evidence of the previous three centuries. The names of Metchnikoff, Roux, Castellani, Schaudinn, Hoffman, Landsteiner, Noguchi, Bordet, Wassermann, Kolmer, Meinicke and Kahn are outstanding in their many notable contributions leading to the laboratory proofs and criteria for the diagnosis of syphilis. It was therefore not unexpected that treatment would likewise benefit from this stimulus, and the empiricism of the past centuries was replaced by studies on experimental pharmacology. This resulted in Ehrlich's famous work on atoxyl, preparing one formula after another until in 1900 to 1910 the

successful "606", salvarsan, was evolved. The dream of Ehrlich for a "therapia sterilans magna" was not fulfilled in his life-time.

It was but a few years back that we were dependent on the long course of treatment consisting of alternating courses of arsenic and bismuth over a period of 18 months. The difficulty of ease-holding on this lengthy treatment led to a search for a shorter but effective treatment schedule, and this was rewarded by the 5-day treatment of arsenic developed by Hyman, Chargin and Leifer; however, on account of its potential toxicity, the army schedule of 26 weeks of mapharsen and bismuth was evolved as a comparatively safer but still effective treatment. Great was the mental comfort obtained in the British war-time discovery of B.A.L. as an effective antidote for heavy metal poisoning, especially arsenic. However, much continued to be written about the toxic reactions of arsenotherapy. The year 1943 heralded the beginning of a new era in the therapeutic, epidemiological and immunological approach to syphilis. The observation of Mahoney, Arnold and Harris² that penicillin was able to cure rabbit syphilis, led to their use of this antibiotic in four cases of early syphilis. Their results were so encouraging that the United States Government, pressed by the exigencies of World War II, set up the Panel on Penicillin Research under the chairmanship of Earle Moore³ of Johns Hopkins. This panel, supported by the combined efforts of America's outstanding syphilologists and clinics, tested various treatment schedules and dosages and types of penicillin preparations, and by its well organized efforts and teamwork accomplished within five years what would have taken probably a quarter of a century of individual effort to amass and assess. We must, however, bear in mind Stokes'⁴ dictum: "From A.D. 1943, it will take a year to guess, two years to intimate, five years to indicate, a decade or more to know, what penicillin does in syphilis".

In Chicago, during the recent meeting of the American Academy of Dermatology and Syphilology,⁵ at a special meeting of such well-known authorities as Rein, Mahoney, Arnold, Curtiss, Loveman, Bierman, Olansky, Nelson, Shaffer, Kitchen and Romansky, there was almost complete unanimity of opinion that penicillin alone is the best and safest treatment for syphilis. However, there were divergent views as to the amount of the drug required. It was agreed that the present product, procaine penicillin

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G in oil and aluminum monostearate, is the one of choice, providing an ambulatory treatment.

An idea of the comparative safety of penicillin may be gleaned from recent figures given by Rein⁶ at Chicago. In 83,411 cases of syphilis treated with penicillin alone, there were but five severe reactions per 1,000, and no deaths; whereas in 149,114 cases treated with penicillin, arsenic and bismuth, there were 12.7 severe reactions per 1,000, and 18 deaths.

The experimental work of Nelson⁷ at Johns Hopkins indicates that in early syphilis it is possible to cure syphilis before the forces of immunity come into play, and it is in this stage of syphilis that there is a unanimity of opinion of most of the American syphilologists⁵ that penicillin alone apparently can effect a cure. The results of Alexander and Sehoh⁸ of Dallas, Texas, on the abortive treatment of syphilis lend ample support of this tenet. Nelson's⁷ work also suggests that immunity develops after infection but requires months to years and therefore in late syphilis treatment may be regarded as a supplement to body defenses, in contradistinction to the use of treatment as a substitute for immunity in early syphilis. It is for these reasons that we have now decided to treat primary and secondary syphilis with penicillin alone, and supplement penicillin with ten weeks of bi-weekly mapharsen and weekly bismuth in latent syphilis, whether early or late.

Next to early syphilis, the most gratifying use of penicillin alone has been in the management of syphilis in pregnancy. It is possible to wipe out prenatal (congenital) syphilis if blood Kahns were routinely taken as an integral part of prenatal examination, and every case of syphilis in pregnancy discovered and treated. We also feel that penicillin alone, along with expert paediatric care, is the treatment of choice in early prenatal syphilis, and that in late prenatal syphilis, as in acquired late syphilis, the combination of penicillin, mapharsen and bismuth will yield the best results.

The results of Dattner and Thomas⁹ at Bellevue, Curtiss at Ann Arbor and Stokes, Bierman *et al.*, at Philadelphia, and O'Leary and his workers at Mayo have established penicillin as the drug of choice in the management of central nervous system syphilis, and at our clinics we prepare these cases with bismuth and potassium iodide to prevent Herxheimer reactions, and combine penicillin with malaria only where in-

dicated, at the discretion of our consultant neurologist. We are treating our central nervous system cases in the main on an ambulatory basis with "depot" penicillin.

Regarding cardiovascular syphilis, as in late syphilis, too little time has elapsed to know what penicillin will or will not accomplish, so that we here are conservative and individualize. We do not share the popular feeling minimizing the potential dangers of Herxheimer reactions and therapeutic paradox from penicillin therapy, and prefer careful preparation of all cases with bismuth and potassium iodide, and hospitalization for penicillin therapy, using aqueous penicillin.

SCHEDULE 1

TREATMENT OF CARDIOVASCULAR SYPHILIS WITH PENICILLIN

To be modified as follow-up reports in the literature may indicate.

1. Cases of C.V.S. (almost any form) complicated by C.N.S. if neurologist concurs.
2. Cases of doubtful C.V.S.
3. Cases of uncomplicated C.V.S. that have not previously had adequate treatment.
4. Cases of uncomplicated C.V.S. that have had adequate treatment and are now on one course of bismuth and arsenical per year.
5. Cases of C.V.S. that are not suitable for arsenical. These to have at least 12 bismuth previously. Penicillin appears to be safer than arsenic.
6. All those cases which are to be treated with penicillin: (a) To have 10 preliminary bismuth injections once weekly plus potassium iodine. (b) To be admitted to hospital for their penicillin treatment. (c) To be given 6 million units penicillin (aqueous) 100,000 units three hourly. Where this routine is not practicable, Depo penicillin may be used in doses of 600,000 units once daily. (d) A course of 10 weekly bismuth injections each year, following penicillin course. (e) Examination twice a year after penicillin treatment.

SCHEDULE 2

PENICILLIN IN NEUROSYPHILIS RECOMMENDATIONS

Preliminary preparation with 10 weekly bismuth plus potassium iodide.

- A. The dosage of 6,000,000 units (100,000 q.3 h. x 60) will remain the recommended dosage for the following: (or 6,000,000 units procaine penicillin ambulatory).
 1. Early asymptomatic neurosyphilis.
 2. Late asymptomatic neurosyphilis. (In those with Group 3 C.S.F. changes, Schedule "B" is recommended.)
 3. Acute syphilitic meningitis.
 4. Diffuse meningo-vascular neurosyphilis.
 5. Gumma of brain or cord.
 6. Vascular neurosyphilis.

After six months, complete examination including C.S.F. examination will be carried out and the patient reassessed.

- B. A dosage of 12,000,000 units (100,000 q.3 h. x 120) (accompanied by induced malaria fever if considered desirable by the consultant) is recommended for patients with neurosyphilis entailing a serious threat to life or vital functions, *e.g.*: (a) dementia paralytica; (b) Taboparesis; (c) primary optic atrophy; (d) nerve deafness in late syphilis; (e) non-paretic syphilitic epilepsy; (f) Erb's spinal spastic paraparesis.

The malaria is only to be given if patient is physically able to stand it.

In our treatment schedules for early syphilis we are using 1.2 million units as the first injection instead of 600,000 units, for the following reasons. The work of Alexander and Schoh⁸ has shown that a single injection of 900,000 units of depo penicillin is apparently sufficient to abort incubating syphilis, and their results so far in early syphilis with this amount is most encouraging.

It has been estimated that about 3% of all persons reporting with gonorrhœa have con-

tracted syphilis at the same time. A review of our statistics reveals an incidence of about 3,600 cases of gonorrhœa for 1948, hence there is an annual potential of approximately 108 new cases of early syphilis with their usual untold number of contacts. The purpose of our proposed "overtreatment" of gonorrhœa with 1.2 million units of penicillin instead of 300,000 units, the usual recommended and effective dose, is an endeavour to reduce the syphilitic reservoir in our Province to the vanishing

SCHEDULE 3
TREATMENT SCHEDULE FOR SYPHILIS

Stage of infection	Total penicillin	Dosage	Total No. of injections	Duration of penicillin treatment	Additional treatment	Follow-up
Primary and secondary	6 million units procaine penicillin in oil with aluminium monostearate	1.2 million units 1st day then 600,000 units once daily	9	9 days	None	Blood Kahn and C.F.—1 monthly for 6 months. If titre falls, or remains low: 3 monthly for next year. 6 monthly for next 3½ years. C.S.F.: for C.F. cells, protein and colloidal gold— (a) before, or immediately after treatment. (b) at 2½ years. (c) at 5 years. Cardiovascular and physical examination at 5 years. Instruct patient to report: 1. If any signs of infectious relapse. 2. If patient should become pregnant.
*Early latent (under 4 years' duration).	6 million units procaine penicillin in oil with aluminium monostearate.	1.2 million units 1st day then 600,000 units once daily	9	9 days	10 weeks treatment †(Mapharsen 0.04 to 0.06 gm, bi-weekly. Bismuth subsalicylate 2 c.c. once weekly. Commencing on the 1st day of penicillin treatment.)	As long as Kahn titre is falling or remains low: Blood Kahn every 3 months for 1 year and every 6 months for 4 years. If titre rises, request consultative service.
*Late latent (over 4 years' duration).	6 million units procaine penicillin in oil with aluminium monostearate	1.2 million units 1st day then 600,000 units once daily.	9	9 days	Precede with 6 weekly bismuth injections. †Follow with 10 weeks (mapharsen-bi-weekly-bismuth subsalicylate—once weekly).	As for late latent syphilis.
Visceral syphilis Tertiary	6 million units aqueous or	50,000 units 2-hourly.	120	10 days	Preceded by: Pot. Iod. gr. 30 t.i.d. and bismuth 2 c.c. once weekly (8 to 10 weeks). Follow penicillin treatment with bismuth 2 c.c. once weekly for 20 to 30 doses. Arsenic given only on recommendation of consultant.	
Gumma	6 million units procaine penicillin in oil with aluminium monostearate	600,000 units once daily	10	10 days		
Syphilis in pregnancy	First 6 months	6 million units procaine penicillin in oil with aluminium monostearate	1.2 million units on first day then 600,000 units once daily	9	9 days	None 1. Follow up as in early syphilis. 2. C.S.F. examination at delivery, if indicated. 3. Take cord Kahn at birth. If previous treatment has been given, request consultative service giving following information: (a) Total previous treatment. (b) Results of recent Kahn tests. (c) Number of pregnancy. (d) Health of previous children, with blood tests.
	†Last 3 months	4.5 million units aqueous	50,000 units 2 hourly	90	7½ days	None
Prenatal (congenital) syphilis	A.	Adequate treatment of mother during pregnancy.				Cord Kahn at birth If negative: at 2 and 4 months do: clinical examination, x-ray long bones, repeat blood Kahn.
	B. under 2 years	120,000 units per lb. body weight, preferably aqueous	1,000 units per lb. body weight 3 hourly.	120	15 days	Nursing and paediatric care is of utmost importance. Follow with bismuth subsalicylate 1 to 2 mgm. per lb. body weight once weekly for 20 weeks.
	C. age 2 to 6					
	D. over 6 years	Adult dosage				

*Note.—No case should be diagnosed as latent syphilis until the following examinations have been made and shown to be negative:
(1) Complete physical examination. (2) Complete cardiovascular examination. (3) Complete neurological examination. (4) Spinal fluid examination for C.F. cells, protein and colloidal gold.

†Contraindications to arsenicals: (1) Age (over 60). (2) Debility or debilitating diseases (e.g., T.B.). (3) Alcoholism. (4) History of reaction with arsenic.

‡This schedule is considered desirable in the latter months unless hospitalization is impracticable.

point. We were further impressed with the potentialities of this attack by observing that during the "sulfa" treatment of gonorrhœa we did not see any chancreoid, which has now again reappeared with the advent of penicillin therapy; hence we are attempting to treat and cure early incubating syphilis by treating every case of gonorrhœa with a dose greater than that which Alexander and Schoh have shown to be effective.

Our own use of this amount for the treatment of gonorrhœa has shown it to be possible as a single injection and comparatively painless. Even with the shortest treatment schedule on an ambulatory basis it is but human to expect lapses and disappearances, so it is felt that the first dose, even if it is the only one given the patient, will be sufficient to go a long way towards effecting a cure. And finally, maybe Ehrlich's dream of "therapia sterilans magna" is close at hand.

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MYOCARDIAL INFARCTION FOLLOWING THE ADMINISTRATION OF TETANUS ANTITOXIN.—A case of serum sickness complicated by acute myocardial infarction is presented and the literature reviewed. The patient was a 32-year old male without evidence of any of the stigmata which might be associated with coronary artery disease. The serum sickness followed the prophylactic administration of tetanus antitoxin and the complicating infarction was suggested as being due to coronary arteritis the result of the allergic disease. It is suggested that many injected materials, including penicillin, streptomycin, insulin and liver extract, may be capable of producing myocardial infarction in sensitive patients.
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AMAUROSIS IN WHOOPING COUGH*

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IT is a well known fact that the acute infectious diseases in the ordinary course of events are readily diagnosed. However, unusual complications such as those involving the central nervous system may obscure the common symptoms to a point where the disease is not readily recognizable. Such was the event in the cases of amaurosis in whooping cough that are here presented.

Blindness in whooping cough is an exceedingly rare complication. Walsh,¹ in discussing the subject, refers to the papers of Lazarus and Levine² who reviewed 20 cases from 1870 to 1930 and presented an additional case of their own in 1934. These authors concluded: (1) Amaurosis in pertussis is a rare manifestation and is seldom permanent. (2) The blindness occurs between the first week and the fourth month of the disease and it may last from a few minutes to nine months. (3) The incidence is widespread and the condition rarely occurs after adolescence. (4) There are no pathognomonic eye findings. (5) At least half of the cases of amaurosis show cerebral manifestations. (6) In the majority of the cases reviewed, it would appear that the ocular changes are due to cerebral oedema or to an acute toxic haemorrhagic encephalitis.

A highly significant fact in these two cases is the similarity of events. The girls were sisters; they contracted the disease about the same time, developed convulsions the same day, and both became blind during the period of convulsions.

CASE 1

M.E., a white girl, aged 3 years, was admitted to the Port Arthur General Hospital on January 14, 1949. The history given by the parents revealed no past illnesses, nor any hereditary or constitutional diseases. A younger brother, a breast-fed infant was not afflicted.

One week prior to admission to hospital, the child manifested what the parents described as a head and chest cold. She became progressively worse and began to have paroxysmal coughs. On the seventh day she developed convulsions and was taken to hospital.

On admission the child was unconscious, frothing at the mouth, listless, and could not be roused. Her temperature was 105° F. The head appeared normal. External examination of the eyes revealed no significant findings. The pupils were dilated and did not react to light or other stimuli. It was difficult during this period to ascertain the nature of her sight. The media, disc,

* Presented at the Annual Summer Session of the Thunder Bay Medical Association, September, 1949.

vessels, macula and peripheral fundus appeared normal. With exception of the frothing, examination of the nose, mouth and pharynx showed no abnormal signs. Examination of the lungs revealed numerous moist and crepitant râles. Cerebral irritability was marked and the reflexes were hyperactive. There was no evidence of paralysis. Several hours following admission to hospital, the child developed her second and last attack of convulsions which persisted for about one hour. Muscular twitchings at this time became numerous and general. Amaurosis was one of the most striking of complications. At intervals she suffered from severe coughing which was whooping in nature. On the following day her temperature rose to 106° F.; with treatment this gradually receded to normal. It was not until the third day that the child began to regain consciousness and to appear orientated. On the third day in hospital, she was noted to grope about with her hands. She had a fixed stare. At this time both of the pupils were normal in size. They reacted sluggishly to light stimulation. In a darkened room her attention could not be attracted by a strong beam of light but she would turn her head in the direction of noise. The paroxysms of cough, cyanosis and vomiting continued for a period of about one and a half months. The temperature became elevated on three occasions during the interval, reaching a height of 103° F. and lasting for 2 to 3 days. A left internal squint appeared during the second week. It was not until one month after admission that it was first noted the child had some light perception. The recovery of vision commenced in the temporal field of the left and the nasal field of the right eye. The fields increased gradually in a clockwise direction. By the end of the second month the child was able to see and pick up objects. As the vision improved so did the squint. By the third month, the child was considered sufficiently recovered physically to be discharged from hospital although it was relatively certain her vision had not returned to normal.

At the fifth month it was felt visual recovery was complete. Eye examination revealed no residual damage such as muscle paresis, optic atrophy, etc. Physically and mentally the recovery seemed to be satisfactory.

Laboratory data.—A chest x-ray revealed the presence of a generalized bronchopneumonia. The early blood studies showed: haemoglobin 100%; white blood cells 20,650; polymorphonuclear leucocytes 56%; lymphocytes 44%. Blood cultures, heterophile antibody test, Widal and blood Wassermann were negative. Throat cultures proved to be negative. The urine at first showed a slight trace of albumen, and a few fine granular casts, occasional pus cell and the odd red blood cell.

Chloroform was administered to control convulsions. Sodium luminal, phenobarbital and morphine were used for sedation. Penicillin and glucose in saline were administered intravenously. There was no specific treatment for the eyes.

CASE 2

V.E., aged 9 years, was admitted to the Port Arthur General Hospital on the same day as her younger sister. One week previously she had developed what was termed a cold characterized by severe coughing spells.

On admission she was unconscious, breathing deeply and in a state of convulsions. This child was more irritable and irrational than her younger sister; she was very sensitive to handling, indicating marked cerebral irritability. Examination of the head and neck was not significant with exception of pupillary reactions. Both pupils were dilated and did not respond to ordinary stimulatory methods. The media, disc, vessels, macula and peripheral fundus appeared normal. Twitchings of the various muscles were numerous and general. Moist and crepitant râles were generally present in both lungs. The deep and superficial reflexes were hyperactive and the Babinski sign was positive.

She remained stuporous for about three days. At intervals she would emit weird screams and babbling sounds. Compared to her younger sister she appeared to be much more seriously afflicted with the disease. There

seemed to be a reversion to what might be described as an "animal-like" state. With treatment the recovery was however much more rapid. For four days the temperature varied between 99 and 101° F. On the fifth day it came down to normal and did not rise again. In so far as the vision was concerned, there was complete amaurosis for one week. At the end of this period she seemed to manifest some light perception. The nature of field recovery was indefinite but it appeared as if her central vision was most affected.

After the first week in hospital her general health improved rapidly. By the end of one month's time her visual acuity had improved markedly in both eyes but recovery was not complete. Examination about three months later found the visual acuity to be normal. Five months later re-examination showed the child to be in a normal state of health and having no residual visual damage.

Laboratory data.—The chest x-ray showed the presence of a generalized bronchopneumonia. The early blood studies showed: haemoglobin 100%; white blood cells 20,650; polymorphonuclear leucocytes 56%; lymphocytes 44%. Blood cultures, heterophile antibody test, Widal and blood Wassermann were negative. Throat cultures proved to be negative. The urine at first showed a slight trace of albumen, and a few fine granular casts, occasional pus cell and the odd red blood cell.

On performing the spinal puncture the pressure was found to have risen to 325 mm. of water. There were present 10 red blood cells per c.mm. In one month's time the pressure became normal. During the early part of the disease the colloidal curve was of a meningitic nature. The globulin portion showed a slight increase on the first test.

Treatment.—This was followed as outlined in Case 1. Chloroform controlled the convulsions and morphine seemed to be the only effective sedative.

COMMENT

The case histories show that the various signs, symptoms and tests point toward brain involvement. The pupils were dilated and non-reactive during the early stage of the disease when cerebral irritation was most marked. Once the convulsions were controlled the pupils became normal in size and reaction. Except for amaurosis the subsequent eye findings were negative. It was concluded that the optic nerves, chiasm and tracts were not affected. The view is taken that the bilateral amaurosis was due to an acute toxic encephalitis with cerebral oedema, complication of whooping cough. In autopsies performed on pertussis patients, frequent pathological findings have been in the nature of oedema and petechial haemorrhages.

SUMMARY

1. Two cases of amaurosis in whooping cough are reported.
2. Comment is made on the assumption that blindness was due to an acute toxic encephalitis.

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ANTIHISTAMINIC DRUGS*

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IN 1900, when he induced anaphylactic shock and acquainted the scientific world with it, Charles Richet was not aware that he had laid the foundations of a new specialty. While able to provoke this shock, he also knew how to prevent it with a specific antigen.

In view of the acknowledged similarity to anaphylactic shock of certain diseases, such as asthma and migraine, against which man was as defenceless at that time as he is nowadays, a desensitizing substance other than the specific antigen had to be found. As for the specific antigen in these states of anaphylactic shock, it was unknown.

The host of products (sodium thiosulphate, calcium gluconate, vitamin C, vitamin P, etc.) which have been used and said to possess so-called desensitizing properties are still remembered. Adrenaline and ephedrine, highly sympathomimetic agents, had, and still have an elective action on asthma attacks and on the various states of shock.

In 1907, histamine, referred to in those days as beta I, was prepared synthetically. In 1909, Barger and Dale isolated histamine from ergot and Windans and Vogt obtained it shortly after, by submitting histidine to the action of the organisms of intestinal putrefaction.

Attempting to desensitize meant attacking an unidentified enemy. Desensitize, but to what? Some new substance capable of causing shock had to be produced or liberated. The reaction attendant upon the exposure of antibodies to antigens results in cellular irritation and in the release of a toxic substance—histamine, or a like "H" substance.

The discovery of histamine was a revelation. The effects of this substance in animals were absolutely identical with those of anaphylactic shock: hypotension with capillary dilatation, contraction of smooth muscles, bronchial spasms, and cutaneous reactions (Lewis triad). The experiments of Dale and Laidlaw in this connection are decisive (1910). In 1927, Best and his co-workers demonstrated the presence

of histamine in nearly all tissues, and Code asserted later that, in man as well as in a large number of animals, 70% of histamine was to be found in white blood cells. Histamine, which is normally present in the lungs and liver of dogs, disappears almost completely from these organs after shock. In 1926, Grant and Lewis reproduced with histamine dermographic phenomena and lesions typical of urticaria. Histamine also exhibits effects similar to those associated with hypersensitivity to cold: fall of arterial pressure, tachycardia, gastric hypersecretion, and rise in skin temperature.

Nevertheless, histamine seems not to be the only shock-inducing agent. Experimental physiological manifestations, such as increased coagulability of blood, leucopenia, and rise in sedimentation rate, were observed in certain types of shock.

Histamine thus proved an important discovery. In fact, it displayed the features of the hunted foe whose noxious doings had to be controlled. More extensive studies of allergic phenomena, their frequent occurrence, and the considerable difficulties they imposed on a good section of mankind attracted the attention of research workers; and many physiological crimes came to be ascribed to histamine. The release of histamine had to be prevented, or its action had to be neutralized. There was no known way of counteracting its effects and, at first, efforts were made at increasing individual tolerance of histamine through repeated injections with small doses of increasing amounts of this product. Some interesting clinical results were reported, but experiments did not bear them out. That tolerance of histamine may be augmented through repeated injections remains to be proved.

This theory and numerous later experiments enabled Horton and his associates to describe a new syndrome: "erythromelalgia of the head", which appears to be related to a release of histamine. The author provoked the classical crisis in these subjects by injecting 0.3 to 0.5 mgm. of histamine. This syndrome is marked by swelling of the temporal vessels on one side, erythema of the skin of this region and rise in its skin temperature, mucous congestion of the corresponding eye and of nose, with unilateral weeping and nasal discharge.

Histamine was next combined with protein substances. The results achieved did not prove

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specific, but, instead, were referable to protein shock, since the effects produced by these proteins alone were identical with those of the azo-protein combination. A like fate awaited histaminase, the enzyme discovered by Best in 1929 and which could destroy histamine *in vitro*. Conditions were not the same in laboratory animals as in man, and it is still remembered how short was the life of torantil.

Meanwhile, research work was proceeding. A substance was sought, whose effects could antagonize those of histamine, one capable of displacing or replacing histamine on tissue cells, and thus, of preventing its harmful effects or their production. Amino-acids were too toxic and not very promising. The discoveries took a new turn in France, owing to Fourneau and Bovet (1933), and the real antihistaminic drugs were introduced there. Fourneau's 929F and Staub's 1571F were ethylenediamines. Their antihistaminic action *in vivo* as well as *in vitro* was clearly demonstrated experimentally, but their toxicity was too great to be used in clinical therapy. All but a few of the products which were to appear later are ethylenediamine derivatives, with added or substituted nuclei of methyl, ethyl, phenyl, etc.

Halpern, in co-operation with Mosnier, of the Rhone-Poulenc laboratories, succeeded in producing 2339 R.P., or antergan. This drug was active enough to prevent the induction of anaphylactic shock in animals and of histamine asthma in guinea pigs. It proved just as effective in man. Neo-antergan (2796 R.P.), introduced shortly after, has all the clinical advantages of antergan and is tolerated much better. These French works were heard of in the United States, and workers of American laboratories marketed two potent drugs in close succession: benadryl and pyribenzamine. These agents have since grown numerous and it is now difficult not to forget some when drawing up a nomenclature, as a new one emerges while the others are being listed.

Various techniques have been employed to assess their value: animal tests, measurement of the histamine papule and of the rapidity of its disappearance under the action of the different antihistaminic drugs, effects of these substances on histamine-induced gastric acidity, etc.

Sternberg, Perry, and Levay recently classified 13 antihistaminic drugs, estimating their value by means of ionization. They use histo-

mine dilutions of 1 in 500,000 and 1 in 10,000,000. The difference between the two solutions capable of producing an urticarial wheal before and after administration of the drug determines the actual value of the test substance. They thus rated the following products in the order of decreasing antihistaminic activity: benadryl, pyribenzamine, neo-antergan, hydrillin, tephorin, diatrin, trimeton, decapryl, tagathen, thenylene hydrochloride, histadyl hydrochloride, neohetramine, antistine. All these compounds displayed their maximum intensity during the two hours following administration.

The use of these products is not free from drawbacks. Some give rise to drowsiness, marked fatigue, dryness of mouth and of mucous membranes, headaches, dizziness, tinnitus, and sometimes, to vomiting, mental disturbances or diarrhoea. These effects are only transient, but they contraindicate the employment of these drugs in some people.

Schwartz analyzed the noxious side-effects of 6 of the most widely used agents: benadryl, pyribenzamine, neo-antergan, antistine, histadyl, and neohetramine. He reports that benadryl causes discomfort in 61.3% of cases, pyribenzamine in 35.7%, neo-antergan in 24.8%, antistine in 22.7%, histadyl in 20.0%, and neohetramine in 7.2%. It is somewhat amusing to note that those exhibiting the highest degree of activity are the most difficult to tolerate, and conversely.

To the names already mentioned, Earl Loew adds chlorothen and pyrolazote. B. & W. recently marketed a derivative of piperazin, perazil, a drug which is slowly absorbed and may therefore be given in small amounts.

All these drugs also possess an anaesthetic action, and this accounts for the fact that they relieve pruritus fast enough when applied topically. Their best field of action is urticaria, angioneurotic oedema, and hay fever. The dosage usually suggested is inadequate in many patients and must be increased two- or three-fold. They must be employed for long periods in some cases, particularly in chronic urticaria. Doses vary between 25 and 100 mgm. and have to be adjusted according to the requirements of each patient. In children, doses of 2 to 3 mgm. per pound of body-weight may be prescribed. Chlor-trimeton has the

advantage of being just as effective in doses of 4 mgm. As all these substances are rapidly absorbed in the intestines, they are quick-acting, and parenteral administration is of no use.

Criep asserts that neo-antergan is the most potent of all in urticaria and angioneurotic oedema, regardless of whether they be of drug, food, vegetal, antibiotic or psychic origin. Benadryl follows neo-antergan very closely. Angioneurotic oedema disappears under its action in 75% of cases, hay fever in 53%, and vasomotor rhinitis in 45%. However, it is one of the most toxic, and its use is thereby restricted.

All these products have but very limited effects on bronchial asthma, the disease which had first caused these extensive researches on antihistaminic drugs to be undertaken. Nethanine (Merrell), when combined with aminophylline and phenobarbital, has proved effective enough in asthma; and Upjohn's orthoxine, although equally efficacious, is sometimes badly tolerated (Grandall Jr.). Urticaria of drug origin, specially that from penicillin, responds quite well to pyribenzamine and benadryl. Vasomotor rhinitis shows a fairly good response in 50% of cases, particularly to trimeton (Loeb).

Several allergists have lately praised the "amazing" action of antihistaminic drugs in "head cold" and non-medical papers which pride themselves in popularizing medicine are known to have acted most eagerly as direct intermediaries between the manufacturers of some of these products and self-diagnosing patients. Feinberg (February, 1950) recently made a thorough survey of the whole matter, and he stresses that most investigators have submitted but little adequate, sufficiently controlled evidence. That coryza proper is due to allergy remains to be proved and there is also nothing to substantiate the claim that antihistaminic drugs have a specific action on this disease.

According to Loeb, antihistaminic drugs afford 75% of relief in urticaria and angioneurotic oedema and they cure chronic urticaria in 75% of cases, hay fever in 80%, and vasomotor rhinitis in 50%. They have an elective action on some transfusion accidents, on allergic reactions from insulin and liver extract, and on serum disease.

Gastro-intestinal allergy being an entity as yet not clearly understood, it is impossible at present to acknowledge that antihistaminic drugs have a beneficial action on digestive anomalies. Bronchial asthma, migraine, and several other so-called allergic phenomena are still waiting impassively for some "H" anti-substance capable of overcoming them.

In view of their anti-spastic properties, many clinicians were impelled to employ some of these products in patients suffering from diseases in which muscular rigidity, of either local or central origin, predominates, although these diseases are in no way related to any allergy. Following some British authors, we utilized benadryl, specially in hemiplegia associated with muscular rigidity, at the Hospital St-Augustin, where many such chronic cases are sheltered. The results were most satisfactory: muscular rigidity decreased in both diseases. In Parkinsonian subjects, perspiration was less marked and speech was improved, as were walking and standing. This drug gives these patients a feeling of well-being which prompts them to beg for it. With benadryl, the institution of more effective and less painful physiotherapy treatment was facilitated in cases of hemiplegia with associated hypertonia.

We may conclude that this therapy of recent date is an important contribution to the fight against allergy. In view of current and swift advances in the field of synthetic drugs, hopes may be entertained that allergic manifestations will soon be confined, with smallpox, to some distant recess of medical history.

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We have learned that you cannot put a patient's mind in a cast. The tuberculosis experience is an interesting example of this. The great problem of the tuberculosis sanatorium is people leaving against medical advice. We have been foolish enough to expect patients to rest idly in bed and not to worry, but worries about families, jobs or money, go round and round in their heads until they decide to give up treatment and go home.—Howard A. Rusk, M.D., Nat. Foundation for Infantile Paralysis.

NEUROTOXICITY OF DIHYDROSTREPTOMYCIN

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APART from the development of bacterial resistance, the most significant limiting factor in prolonged streptomycin therapy is the toxic effect of this drug on the 8th nerve. Reports from the U.S. Veterans' Administration¹ on 900 patients who received 1.8 to 2.0 gm. of streptomycin per day, state that 80% of the patients exhibited hypofunction or abolition of the vestibular response by the 4th week of treatment. In a similar study² involving 766 patients who received 1 gm. of streptomycin per day for 120 days, 25% developed impairment of vestibular function before the conclusion of treatment.

In an attempt to reduce the incidence of these neurotoxic manifestations and also to avoid the development of bacterial resistance it is now recommended that the average course of streptomycin in pulmonary tuberculosis should consist of 1 gm. daily for 42 days. It is evident, however, that in this restricted dosage the full benefits of the antibiotic are unlikely to be attained. With the advent of dihydrostreptomycin, which is reputedly less toxic than streptomycin, it was hoped that a larger dosage could be given with impunity; and it has also been suggested³ that the therapeutic combination of P.A.S. with streptomycin will delay the emergence of resistant strains.

We have therefore treated 21 patients with dihydrostreptomycin, 2 gm. daily for 90 days in an attempt to assess the toxicity of this drug. We have also investigated the effect of combined therapy with dihydrostreptomycin and P.A.S. in an effort to prevent the development of bacterial resistance. The results of these resistance studies will appear in a subsequent communication.

Method of toxicity study.—Twenty-one patients with moderately advanced and far advanced pulmonary tuberculosis were treated. There were no cases of tuberculous meningitis in this series. Each patient received dihydrostreptomycin sulphate (Merck), 1 gm. by intramuscular injection every 12 hours for 90 days. Every two weeks the following investigations were made. (1) A caloric stimulation test.

(2) A simple test of auditory acuity. (3) Examination of the urine for albumen and abnormal microscopic constituents. (4) White blood count.

These investigations were initiated at the commencement of treatment and continued for a minimum period of three months following its conclusion.

Vestibular function was studied by use of a simple caloric test. The method used was a modification of Kobrak's procedure⁴ as proposed by Hobson and associates.⁵

In this test the patient remains in bed and the head of the bed is raised by the standard ratchet device (or other suitable means) so that the patient's head is at an angle of 30° from the horizontal. An infusion bottle containing cool water (15° to 20° C.) is hung from the usual stand so that the water level is approximately 2 feet above the patient's head. A suitable length of rubber tubing, attached to the infusion bottle, is equipped with a glass tip at the free end to facilitate directing the water into the external auditory canal. A clamp is attached to the rubber tubing so that the flow of water may be easily regulated. An emesis basin is useful to catch the overflow of water from the ear during irrigation.

To perform the test, the external auditory canal is irrigated while the patient's eyes are observed for appearance of nystagmus. An assistant with a stop-watch begins timing at the instant irrigation is started.

Regarding interpretation of results, Hobson states, "Although the time of onset and the duration of nystagmus were both noted, it was arbitrarily decided to consider the response abnormal if more than 90 seconds' irrigation was required to produce nystagmus. If no nystagmus occurred after 3 minutes' irrigation, the response was considered 'absent'." If nystagmus is observed, only one ear is tested.

The angle of the head is important for optimum stimulation of the anterior canal. Therefore, if it is desired that the patient be sitting or standing during the test, the head must be tilted backward 60° from the upright, to obtain the same desired position.

This technique yields accurate results and does not subject the patient to unnecessary discomfort or undesirable activity.

Auditory acuity was assessed by the simple procedure of determining the distance at which the patient could hear the ticking of a standard pocket watch. Hearing was considered to be normal if the watch could be heard at a distance of twelve inches. It was thought that in a clinical study of this nature a comparatively rough hearing test was quite adequate and was more appropriate for routine use in the wards than audiometry, which is not usually feasible in the average tuberculosis institution.

RESULTS

(1) No skin rashes of any nature were encountered in this study. (2) No evidence of renal irritation, as indicated by albuminuria or

microscopic haematuria, was detected. (3) There were no changes in the white blood count which could be ascribed to dihydrostreptomycin therapy. (4) No objective evidence of vestibular dysfunction was observed, the results of 284 caloric tests being entirely within normal limits. One patient complained of transient giddiness which passed off after 3 or 4 days and during this time the caloric test showed a normal vestibular response.

(5) *Two patients in this series of 21 became deaf.*—This toxic manifestation developed in similar fashion in both cases. The initial complaint was that of severe tinnitus which appeared suddenly and was associated with marked hearing loss. The tinnitus gradually subsided but did not entirely disappear. The deafness continued without improvement throughout the period of observation, these patients being quite unable to hear ordinary conversation. In one case the onset of tinnitus and deafness occurred on the last day of dihydrostreptomycin therapy (89th day); and in the other it did not develop until the 24th day after the end of the course. In neither case was deafness preceded by or associated with any alteration of vestibular function, and at the time when both patients were quite deaf they continued to show a normal response to caloric stimulation. Both these patients died of their disease—one four months and the other one month after the conclusion of treatment. During this period neither showed any evidence of improvement in hearing.

DISCUSSION

The pathogenesis of 8th nerve disturbances occurring during streptomycin and dihydrostreptomycin therapy has been the subject of several investigations. Stevenson *et al.*⁶ were able to demonstrate degeneration and necrosis of 8th cranial nerve nuclei in humans and dogs given large doses of streptomycin, but these findings have not been corroborated by all observers. Fowler and Feind⁷ have suggested that the neurotoxic manifestations produced by this drug may have an allergic background. Using the cat as an experimental animal they found that deafness and vertigo produced by streptomycin could both be diminished by the concomitant administration of anti-histaminics, and that a further reduction in these toxic effects was observed when the animals were previously desensitized. The latter procedure, however, would not appear to be clinically applicable

owing to the obvious danger of facilitating the development of streptomycin resistance.

Although the exact nature of the 8th nerve lesion is not yet clear, its incidence on various therapeutic regimens has been extensively reported. As has already been stated, the U.S. Veterans' Administration has reported that 80% of 900 patients developed vestibular dysfunction within 5 weeks when treated with streptomycin in a daily dosage of 2 gm. Studies of comparable size have not yet been reported in the case of dihydrostreptomycin, but, although available reports indicate that vestibular dysfunction may occur on high dosage schedules, it is generally agreed that, in comparable dosage dihydrostreptomycin is significantly less toxic to the vestibular apparatus than is streptomycin.^{5, 8, 9} We would emphasize, however, that, in these studies varying doses were used for different periods of time, and the total number of patients on a single regimen has been extremely small. To our knowledge, the present study is the first to be reported in which 20 or more patients received 2 gm. dihydrostreptomycin for 90 days, and our results in this respect corroborate those of previous investigators.

Loss of hearing resulting from streptomycin therapy has only rarely been reported, and in the majority of cases when it has occurred, it has complicated the therapy of tuberculous meningitis, which may itself cause deafness. In all cases, however, it has been preceded by evidence of vestibular dysfunction.

Although dihydrostreptomycin has been widely used for the past 18 months, we have been able to find only one study in which deafness has been reported as a complication of therapy. Allison, Volk and Vitagliano¹⁰ treated 10 patients with 2 gm. and 10 with 3 gm. for 90 days, and found no audiometric evidence of hearing loss at the conclusion of treatment. However, four patients (one on 2 gm. and three on 3 gm.) subsequently became deaf at periods varying from 4 to 8 weeks after completion of therapy. Domon, Kilbourne and King¹¹ carried out a thorough study on 9 patients receiving 3 gm. dihydrostreptomycin for 90 days. Audiometry was continued for 12 weeks after completion of treatment, but revealed no evidence of hearing loss. However, they quote the findings of Romansky, Katz and Glorig who encountered deafness in 20% of their cases on dihydrostreptomycin hydrochloride; and the suggestion was

therefore made that the hydrochloride may be more toxic than the sulphate to the cochlear nerve. It is therefore worth noting that in our series of 20 cases in which the sulphate was used exclusively, deafness developed in two cases.

Although it is difficult, from these scattered observations, accurately to assess the risks of dihydrostreptomycin therapy, it is abundantly clear from these studies and our own that there is a distinct danger of deafness if large doses are used. Further, it is apparent that this deafness does not usually occur until several weeks after the drug has been withdrawn, and that it is not preceded by any warning in the form of vestibular dysfunction. These findings are in striking contrast to the situation which obtains in the case of streptomycin.

It remains to be seen whether carefully performed audiometric tests would furnish the warning signal which is lacking in the case of dihydrostreptomycin, by giving evidence of an earlier stage of cochlear nerve damage than is revealed by rougher tests of auditory acuity and the onset of clinical deafness. If such were the case it would also be necessary to determine whether such evidence would present itself at a sufficiently long interval before the onset of clinical deafness to be of any practical value. It would then be necessary to demonstrate whether or not cessation of therapy at this point would prevent progression to the stage of clinical deafness. These considerations might well form the basis of subsequent investigations; but until such evidence is available it is probable that the control of dihydrostreptomycin therapy will depend upon clinical considerations alone. We would therefore conclude that the administration of dihydrostreptomycin in the dosage stated is highly dangerous and should not be recommended.

SUMMARY AND CONCLUSIONS

1. Twenty-one patients with pulmonary tuberculosis were treated with dihydrostreptomycin sulphate, 2 gm. daily for a period of 90 days.
2. None of these patients showed evidence of vestibular dysfunction.
3. Two patients developed severe hearing loss, one on the 89th day of therapy, and one 24 days after the drug had been withdrawn.
4. It is therefore concluded that dihydrostreptomycin is not the innocuous drug which previous reports have indicated.

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FRACTURES OF THE MALAR BONE AND ZYGOMATIC ARCH*

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THAT fractures of the malar bone and zygomatic arch do not occur with greater frequency is one of the many wonders of the human organism. The buttressed cantilever arches that build up the malar bone to its promontory, which, though paper-thin, can withstand blows of several hundred pounds pressure, would be a triumph indeed for any mortal engineer. When fractures do occur these same structural peculiarities make for definite modifications in the bone-setter's usual technique.

Three standard approaches to these fracture areas are described: (1) The direct incision over the zygomatic arch; or simple puncture wounds on either side of the arch for a levering tool or wire. (2) An incision back of the temporal hairline with passage of a lever from this point, by blunt dissection, to beneath the zygomatic arch. (3) An approach through the maxillary antrum by an incision through the mucous membrane on the gingival margin adjoining the buccal reflection, posteriorly from the root of the second bicuspid.

The first approach, because it is often mutilating and frequently inadequate for purposes of reduction, is rarely used. The second approach is satisfactory when the major displacement is confined to the zygomatic arch. Strong leverage can be brought to bear and a good reduction obtained. But, if the malar eminence

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is crushed as well, elevation of the zygoma alone is not enough and it is necessary to enter the antrum through the mouth. This third approach is the most satisfactory and the most generally applicable of the three. That it has been frowned on in the past is probably due to the sound, surgical dislike for approaching a fracture through a potentially infected field. However, we have never seen osteomyelitis follow the reduction of a fractured malar bone through the antral approach, and prophylactic use of the antibiotics in recent years makes this danger most remote.

The incision we have come to use routinely for fractures of the zygomatic arch and malar bone, with or without involvement of the infraorbital plate, is simply a development of the standard antral approach. The incision on the gingival mucosa is extended posteriorly from the root of the second bicuspid to the root of the second or third molar. Through the

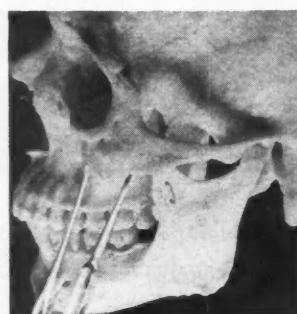


Fig. 1



Fig. 2

Fig. 1.—Passing through the same gingival mucosa incision, the two elevators, one in the antrum and one beneath the zygomatic arch may be manipulated together. **Fig. 2.**—Rods placed on the infraorbital ridges, on the promontory at the junction of zygoma with superior maxilla, and resting above on the supr-orbital notches, will reveal minute displacements of the infraorbital margins.

anterior part of the incision the antrum is entered. Through the posterior part, by a little blunt dissection, a lever is passed beneath the zygomatic arch. This gives a more direct approach than through the temporal incision, and the two levers, one in the antrum and one beneath the arch, lying side by side, can be manipulated together, giving excellent control over the bony fragments.

The three conditions to be corrected in simple fractures of the malar bone and zygomatic arch are: (a) the cosmetic deformity; (b) the loss of sensation along the distribution of the infraorbital nerve when this has been pinched in its foramen, and (c) diplopia.

If none of these three signs is present, operation is not indicated no matter what multiplicity of bony cracks are shown by x-ray. Loss of sensation in the distribution of the infraorbital nerve is not, in itself, an indication for operation. As in other traumatic nerve lesions the damage has probably been done at the time of injury. The value of operative aid is always doubtful and even if the lesion be permanent it is a minor disability.

Diplopia is always an indication for operative correction once it is ascertained that the condition is due to displacement of the infraorbital plate, and not to contusion or haematoma within the orbit.

By far the commonest condition demanding correction is the deformity. It is desirable that the surgeon see the patient as early as possible after the accident and before swelling has taken place, to determine how great this deformity is. A corollary to this statement is that an accident victim with traumatic swelling over his malar bone should always be subject to careful x-ray study. Discovery of a flattened malar eminence five or six weeks after an accident, with the subsidence of swelling, and when bony union is firm, is most distressing both to patient and surgeon.

Probably the optimum time for operation is three to six days after the trauma. This period gives time for the first congestion to subside and also time for some organization of the haematomata among the fragments. This is necessary as they aid in holding the multiple fractures in place and maintaining reduction.

When the incision is made, the fracture line, across the base of the malar and common to almost all malar fractures, usually comes into view. This fracture line affords the simplest way of entering the antrum. After widening the line with a bone elevator a portion of the malar can be nibbled away. It is important not to take more than is absolutely necessary to allow free play of the lever within the antrum. A large opening means greater bone loss and consequent increased difficulty in supporting the malar after reduction.

If the exploration of the antrum be carried out with gentleness, and if the lever be not too sharp, there is no need of tearing the antral mucosa. Preservation of this lessens the possibility of infection and it also serves as a sup-

port for the light bone fragments. After the malar eminence has been rounded well into shape the second lever is inserted beneath the zygomatic arch and working with the two together adequate reduction can be attained.

A measurement we have found of value in checking the reduction is carried out with two small rods. Straight grooved directors will serve well enough. Standing above the patient's head the surgeon places a director on the supraorbital ridge, its end resting on the infraorbital ridge, on the small promontory at the junction of the marginal process of the zygoma with the superior maxilla, and its shaft extending up across the orbit and resting in the supraorbital notch (Fig. 2). The second director is placed in the same position on the normal side. Comparing the angles made by the two directors, the most minute depression of the infraorbital ridge may be detected.

If the reduction has been carried out with care and gentleness it is unlikely that any retention will be needed to maintain it. However, if the fragments do not lock in place and tend to collapse as soon as the levers are removed, the antrum may be packed with gauze, bringing the end down through the nostril for removal in five or six days. The gingival incision is closed without drainage.

During early convalescence the patient must sleep without a pillow and wearing a head-band fashioned from adhesive and large corks, not unlike the diadem of the Statue of Liberty, askew to the injured side of the face. This prevents his lying on the fractured area during sleep.

SUMMARY

An incision through the mouth giving a common approach to the maxillary antrum and the zygomatic arch for reduction of the malar bone and zygoma is presented. A measurement for checking reduction, and a head-band for protecting the fracture area are also discussed.

All that mankind has done, thought, gained or been: it is lying as in magic preservation in the pages of books.—Thomas Carlyle.

A NEW SEDATIVE COMBINATION FOR GENERAL PRACTICE

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SINCE the advent of the barbiturates as sedatives many derivatives of the basic formula have been introduced and the announcement of new members of this series, in the absence of incontestable evidence of their unique value, is not calculated to arouse prolonged interest. For use in general practice individual differences between members, apart from rapidity of onset and duration of the sedation induced, are not profound and most physicians probably choose to select between two or three of the many derivatives available and with which they have become familiar. However, none of these drugs is without shortcomings and among the more frequent of these is the rather pronounced sensation of being "drugged" and the consequent feeling of apprehension which may lead to wilful resistance and even hysteria. Then again, particularly with phenobarbital as a day-time sedative, there may be sufficient accumulation, even after a few days on small doses, to lead to a persistent feeling of drowsiness and confusion. And, of course, there is always the hazard that the patient, either through impatience for effect, or lack of appreciation of the dangers, or for suicidal purposes, may overdose with serious, if not fatal, consequences.

Recently a new sedative* combining scopolamine, apomorphine, hexobarbital, phenobarbital, and niacin, was introduced which is claimed to overcome or minimize these shortcomings and its usefulness in the sedation of senile, confused, and psychotic patients has already been reported.¹ From pharmacological and other considerations this combination seemed an attractive one for use in general practice and, accordingly, we undertook to evaluate the product for this purpose. We have now used the preparation routinely for more than a year and have recorded the results obtained in some one hundred patients, falling roughly into four main groups.

1. As a day-time sedative for hypertensive or hyperactive individuals—typified by the harassed executive but including representatives of many groups—schoolteachers, housewives, etc.

* Somnol (Frank W. Horner Ltd.): Tablets containing scopolamine hydrobromide 1/200 gr., apomorphine hydrochloride 1/70 gr., hexobarbital 3/4 gr., phenobarbital 3/8 gr., and niacin 3/4 gr.

2. "Neurasthenics": — particularly at the menopause when satisfactory relaxation may permit the minimum use of hormones.

3. Pre- and post-operatively: — where analgesia is not required but relaxation and suppression of apprehension and excitement is desirable —*e.g.*, as in thyrotoxicosis.

4. Simple insomnia: — of nervous origin or in normal individuals who are "over-tired" as a result of physical or mental overwork.

Results and discussion. — It soon became apparent that the preparation, despite its success in psychotic patients, was only mildly hypnotic in the usual dosage employed (1 or 2 tablets) and obtained its sedative effect primarily by relaxing and allaying the anxieties of irritable or apprehensive patients. This occurs without the patient's being aware of any drug action and, where there is a genuine fatigue, serves to initiate a natural sleep mechanism. Thus, for insomnia, we found the drug most effective in sedating patients having long standing or recurrent episodes of insomnia due to underlying tensions and frustrations but relatively ineffective as an emergency hypnotic in the absence of fatigue. In this connection we believe the drug to be effective in the night-time sedation of apprehensive surgical patients, pre- and post-operatively, but not sufficiently reliable or strong enough to obtund the patient immediately prior to the induction of anaesthesia.

Because of this property of psychic sedation we found the preparation to be most effective and to have, we believe, unique value in sedating that group of patients which seems to be one of the most frequently seen in office practice today, namely—middle-aged, hard-working males—usually "successful business men" (often with paroxysmal hypertension) who suffer from compulsions to work and worry and an inability to relax. Somewhat similar are those patients (usually female) characterized by vague apprehensions and frustrations with complaints of ill-defined vasomotor symptoms, psychosomatic upsets and even mild fear of crowds or solitude—all of which may be complicated by the approaching or actual menopause. In these groups the drug has an especial advantage, for its relaxant action is not apparent and, consequently, the patient is agreeably relieved by the effortless dissipation of his or her compulsions and anxieties. If used by such patients in a dose of one-

half or even one tablet, two to three times daily, there is, in contrast to the protracted use of ordinary barbiturates such as phenobarbital, little or no tendency to drowsiness, mental blurring or feeling of oppression. Although the drug could be used as a night-time hypnotic in these patients, many found that the removal of their customary tensions during the day permitted a normal and natural induction of sleep at bedtime.

Pharmacological considerations. — The value of scopolamine as a tranquillizing drug for emotional disturbances is generally recognized but since idiosyncrasy to it is not uncommon its use is limited without individual assessment. However, this tendency to produce or aggravate hysteria is reportedly decreased by the simultaneous use of apomorphine² and this combination is now used to some extent, particularly in obstetrical anaesthesia.^{3, 4} Among our patients, there was no evidence of the present combination producing hysteria although others may eventually find this. As a matter of fact, we have used the drug on agitated, semi-hysterical patients with satisfaction; the response of one five-year old child, subject to hallucinatory dreams, was notable.

The apomorphine (1/70 gr. per tablet) besides exerting this potentiating action on scopolamine and its own central depressant effect, might be considered as a "safety factor" to produce vomiting if large overdoses (upwards of ten tablets) were taken. This amount would be in the range of the emetic dose.⁵ However, the emetic effect is probably reduced during sedation and, moreover, the effect of the drug orally is unreliable so that this cannot be considered as a dependable safeguard.* Furthermore, the emetic action of apomorphine is a central one and so, a considerable if not major, portion of the other central nervous system depressants would be absorbed before vomiting could occur. There may, however, be some degree of protection with this component since a severe bout of vomiting might conceivably interrupt or alter a suicidal plan. Then too, patients who may be tempted to increase the prescribed dosage will sometimes be nauseated, and so acquire a desirable respect for the sedative.

* We have been advised that one attempted suicide took 41 tablets (total dose: scopolamine 1/5 gr., apomorphine 3/5 gr., hexobarbital 30 gr., phenobarbital 15 gr., niacin 30 gr.) without vomiting or any other remembered effects apart from hypnosis for some 24 hours.

Three of our patients have reported such an effect with four tablets at a single dose.

Combinations of rapid and slow-acting barbiturates (in this case, hexobarbital and phenobarbital) are not new and have some advantage in that the burden of elimination and detoxification is divided between the kidneys and liver.

The effect of the niacin is difficult to assess. This agent, apart from its physiological rôle as a vitamin, has been employed therapeutically as a non-toxic vasodilator in confusional states,⁶ headaches⁷ and migraine,^{8, 9} etc. Lehmann¹ has suggested that this activity in the present sedative combination may serve to decrease the mental confusion and blurring which often accompanies barbiturate administration. Certainly, we have been impressed by the complete absence of "hangover" or mental blurring in all patients in our series. In fact several remarked on their increased ability to concentrate and think clearly. It must be admitted though, that all this may be due in some degree to the small amount of barbiturates present in the formula.

Although no such incidents were reported with the product as a day-time sedative, patients have occasionally complained of flushing when taking two tablets as a hypnotic. However, this was short-lived, and when advised that this effect had no significance the patients seemed completely satisfied. This flushing effect is largely unpredictable, varying from individual to individual and from occasion to occasion. In general though, one and one-half grains is considered to be the minimal flushing dose.

CASE REPORTS

CASE 1

Mr. L., aged 41. This patient sought advice for a feeling of dizziness and nervousness during the day, and at night, restlessness and apprehension which frequently necessitated heavy barbiturate dosage. He gave a history of continued use of bromides, etc. Physical examination was negative aside from hyperactive reflexes, and blood pressure averaged 150 to 160 systolic. All laboratory tests were negative and it was felt that he did not suffer from incipient hypertension.

He was offered a prescription of somnol tablets—one-half tablet t.i.d. and one at bedtime, with instructions to discontinue all other medication. He reported back two weeks later with blood pressure 130/80, anxiety much decreased and claimed to be feeling better than he had for months. He had noted no hypnotic effect from the drug but slept soundly and awoke refreshed. His former feeling of dizziness was considerably decreased and he was able to accomplish more work during the day. He was then instructed to use this sedative only when necessary and has done so for the past year. No further trouble has been encountered and his blood pressure has never risen above 140 systolic. He found it easy to discontinue all other drugs, including aspirin for frequent tension headaches. He was recently awarded

a large life insurance policy which he had always felt to be unobtainable. Neither nausea nor flushing have been experienced.

CASE 2

Mrs. W., aged 38. This patient had been operated on many times for definite disease, indicated by x-ray and laboratory tests. Her most recent illness consisted of colitis-like pains and epigastric distress, all complicated by the menopause brought about surgically two years before. The patient was hospitalized and general therapy initiated with numerous radiological examinations. Gastritis was diagnosed, and a prediverticulosis existing with segmental spastic colitis was noted. Because of her cancerphobia, and on her insistence, a laparotomy was performed. At operation, the duodenum was markedly deformed, old ulcer scars were noted, and considerable adhesion formation around the old gallbladder bed and duodenum was found. An operating room diagnosis of gastritis with healed but recurrent, duodenal ulcer was made. It was decided to do a gastroenterostomy as the patient was not fit for bigger surgery.

Following this, the patient convalesced well and seemed improved. She was sent home for three months' bed rest with a bland diet and hormone therapy, etc. However, complaints of irritability and general abdominal pains were still present although to a lesser degree. Her sleep was disturbed by these symptoms and it was felt that she had undergone too much surgery in the past 10 years ever to reconstitute herself psychosomatically.

Empirically, somnol therapy was initiated to remove or reduce other more potent drugs. The dose at first was one tablet t.i.d. and one at bedtime. After one week the patient reported a marked diminution in her symptoms and she was able to be out of bed for a few minutes; appetite and digestion had improved and her mental outlook was decidedly more cheerful. This dose has been regularly reduced and now the patient seems quite well and has been able to do her housework. There are only occasional symptoms of her former condition although some disease of the colon still exists.

This case is an excellent illustration of the beneficial effects of mild psychic analgesic action obtained in a long-suffering patient after surgical and medical efforts proved disappointingly inadequate.

CASE 3

Mrs. L., aged 36. This patient was a plump active woman who had always desired to lose weight. However, she suddenly began to lose weight for no apparent reason and upon examination it was discovered that she had a moderately severe thyrotoxicosis with a basal metabolic rate of plus 48 and a weight loss of 28 pounds in six weeks. No classical symptoms were present.

Reduced proportions of thiouracil therapy were instituted and, some five weeks later, the patient was admitted to hospital and various examinations were carried out prior to operation. Apprehension was marked at this point although her physical condition was much improved. Somnol was used in lieu of other medication, one-half tablet t.i.d. and one at bedtime. The patient did well, slept normally and lost most of her fear of operation, although at no time did she feel drugged or sleepy during the day. The operative procedure was uneventful and the patient needed opiates for only 36 hours postoperatively. Iodine was used intravenously and on the second postoperative day, the former somnol ration was re-established. Except for one hypodermic, the patient maintained this ration and was discharged in good condition on the sixth postoperative day—remarking that she "never knew it could be so easy". Subsequently, the patient occasionally resorted to somnol tablets but gradually has given them up entirely. Neither nausea nor flushing were experienced even with a maximum daily dose of three tablets.

This case illustrates how adequate sedation in a serious disease, necessitating surgery, contributes markedly to the patient's welfare in convalescence.

CASE 4

Mrs. R., aged 44. This patient had been seen for several years with pre-, and actual, menopausal symptoms. Apart from the usual signs, her main complaints were hyper-irritability, depression, and sleep disturbed by dreams. Physically, the woman was perfectly normal, happily married with two grown children and no financial problems. However, she had developed symptoms of claustrophobia, fear of crowds and a fear of night and darkness. Psychological discussions did no permanent good, for, although she claimed to understand her condition, she could not control it. Hormone therapy was instituted with some benefit but the amount required to control her symptoms seemed excessive. She was given somnol and told to use it in the interim between her hormone injections in a dosage at first of four tablets daily. This produced no severe effect other than a flushing. However, the marked improvement in her sleep and mental outlook adequately compensated for this complaint.

Progressively, the hormone treatments were reduced as was her daily dose of somnol to about two tablets, and now, some two years after her initial treatment, she is apparently normal, sleeps well, with only minor episodes of irritability and depression. She now uses somnol sparingly and has to resort to hormone therapy only two or three times yearly, for limited periods.

This case illustrates the advantage of using a mild but adequate sedative in place of massive doses of possible carcinogenic agents which were not fulfilling any total beneficial effect.

SUMMARY

A new sedative combining scopolamine, apomorphine, hexobarbital, phenobarbital and niacin, has been employed for a variety of conditions frequently encountered in general practice.

It is not a powerful hypnotic, but it is our impression that the rather exceptional tranquilizing properties and apparent absence of some of the barbiturate limitations make it a useful preparation, particularly for the day- and night-time sedation of irritable or apprehensive individuals and those characterized by an inability to relax even in the presence of genuine fatigue.

The pharmacology and clinical effects are discussed.

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RÉSUMÉ

L'auteur a fait l'emploi d'un nouveau sédatif contenant de la scopolamine, de l'apomorphine, de l'hexobarbital, du phénobarbital et de la niacine, dans le traitement de certaines conditions rencontrées fréquemment en pratique générale v.g. l'hypertension, la neurasthénie, l'insomnie etc. L'auteur a constaté que ce médicament possédait des qualités sédatives supérieures aux barbituriques tout en étant exempt des limitations de ces derniers. La scopolamine est donnée comme sédatif, l'apomorphine pour combattre la tendance hystérique parfois rencontrée chez des patients recevant de la scopolamine et pour son action émétique en doses plus fortes, l'hexobarbital et le phénobarbital sont des barbituriques à action respectivement rapide et lente. L'acide nicotinique est employé pour sa valeur vitaminique et son action vasodilatatrice. Quelques cas sont rapportés pour démontrer l'effet de ce médicament.

YVES PRÉVOST

ACUTE LEUKÆMIA WITH A FOLIC ACID ANTAGONIST

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THE rationale for the use of anti-folic acid substances in the treatment of acute forms of leukæmia has been presented a number of times. Folic acid is recognized as a growth-controlling factor. Several substances closely related in chemical structure have been found to be biologically antagonistic to folic acid. The effect of folic acid deficiency states in retarding leukæmia, and the "acceleration phenomenon" in the leukæmic process when folic acid is given have led investigators to attempt treatment with folic acid antagonists.

These preparations are the only ones known to have induced remissions in a convincing proportion of cases with acute and subacute leukæmia. They have been found to be of no value in the chronic or fulminating types. Heretofore these diseases have run a rapidly fatal course within a few weeks. The effect of the preparations, however, is at present uncertain and is often associated with side effects which may be dangerous. It is possible that with the development of new types of antagonists and further knowledge of their use more gratifying results may be expected. It has been stressed that the drugs offer no cure and that a relapse will occur when treatment is stopped, and unfortunately also even though treatment is continued.

The small group reported here is presented because it is believed that these cases demonstrate most of the favourable, toxic and other effects described in the literature. These cases

received 4-aminopteroyl-glutamic acid (aminopterin) in varying dosage. They were followed as is recommended by daily blood counts, physical examination, and repeated checks of bone marrow.

CASE 1

J.D., girl, aged 7. The patient had always been well until three weeks previously when her mother noticed that she was becoming increasingly pale. She was seen first with an ulcerated lesion of her nose which tended to bleed considerably. Further investigation revealed other abnormalities: extreme pallor, temperature 102°, liver palpable, spleen palpable.

Laboratory.—Hgb. 32%; red blood cells 2,200,000; white blood cells 20,000. The smear showed very rare normal cells. Predominant cell was moderately large and the nucleus had a fine structure with many nucleoli. The cytoplasm was blue and without granules.

The marrow cell count was 128,200. Predominant cell was similar to the cell described in the blood. Normal cells were rare. Some of the cells appeared, however, more mature than others. Platelet count 96,880. Fragility test: partial haemolysis at 0.5%, complete at 0.36%. Bleeding time: 6 minutes. Clotting time: 6 minutes. Quantitative serum bilirubin 0.5 mgm. %. The diagnosis was acute leukosis.

Course.—The little girl spent the next seven weeks in hospital. She received 5 mgm. of aminopterin in 5 days. The leukocyte count rose from 3,550 to 14,600 then dropped to a low of 950. The marrow count dropped from 128,000 to 6,000. At this point she received folic acid and liver extract. Her condition became serious; high fever persisted and she tended to bleed from her nose and mouth. The haemoglobin was not maintained in spite of transfusions. She received no aminopterin for fifteen days. At this point some improvement was noticed. She was given 7 mgm. of aminopterin during the next nine days. And from this point on she showed marked improvement. The white blood cells rose to a high of 8,000; the haemoglobin rose to 77%. I noticed further signs of improvement in her blood; eventually I could not be sure that any abnormal cells could be found. The enlargement of the glands and the spleen disappeared.

After discharge from the hospital the patient resumed her normal activities and felt perfectly well. She returned to school during the months from October to February. She received no treatment during these five months. At the end of this time there was both clinical and laboratory evidence of relapse. She was readmitted to hospital and again responded quickly to a few doses of aminopterin. Upon discharge she returned to school and remained well. She made weekly office visits and on almost every occasion received an injection of aminopterin. She completed her school year and stood very high in her class.

Ten months after the diagnosis was made the patient was readmitted to hospital with marked signs of relapse. A distinct bleeding tendency developed associated with an abnormal susceptibility to infection. Her blood and marrow were very abnormal. This time she showed no response to aminopterin nor to any other supportive treatment. Death came in a few days.

CASE 2

C.J.O., girl, aged 2 years. The patient was well until three weeks prior to admission to hospital when she had fallen downstairs. She developed haematuria and later, high fever. There were purpuric spots over her entire body. There was marked pallor. Purpuric manifestations were general in the skin and mucous membranes. The parotid glands were large and swollen and very tender. The adenopathy was general and both liver and spleen were moderately enlarged.

Laboratory.—Red blood cells 1,490,000; Hgb. 22%; white blood cells 164,800. The predominant cell in the

smear was a degenerate or basket type cell. Other cells were large in size with a large nucleus having fine nuclear structure with nucleoli. No granules were present in the cytoplasm. Polymorphonuclears were rare. The marrow count was 512,800 per c.mm. The cells present were almost entirely of one type and appeared as the immature cell described above. The diagnosis was acute leukosis.

Course.—This patient was treated for a period of eight days before her death. She received 1 mgm. of aminopterin daily for four days. She was supported by repeated transfusions, penicillin, streptomycin, koagamin, vitamin K and vitamin C. The essential features were a high fever throughout the course of the illness, an increasing tendency to bleed from skin, mucous membranes, bowel, bladder, and marked alteration in the white cell count. The white blood cells dropped steadily from 164,800 per c.mm. down to 450 per c.mm.

CASE 3

RH., boy, aged 2 years. This child had always seemed pale and always had a tendency to bruise. The mother noticed unusual haemorrhagic areas on his buttocks after spanking. Six weeks before I first saw him he had chickenpox with a high temperature and was very ill for five days. He had a nose bleed lasting for 24 hours. His extreme pallor persisted after he had recovered from chickenpox. Examination revealed bleeding areas in the left nostril, a large haemorrhagic area in the mouth and numerous petechiae over most of his body. Glands were present in all areas. Neither spleen nor liver were palpable.

Laboratory.—Red blood cells 1,840,000; Hgb. 25%; white blood cells 341,600. Both blood and marrow demonstrated a preponderance of an immature cell—a cell with a fine chromatin structure to the nucleus exhibiting many nucleoli. The nucleus was large and cytoplasm was blue without granules. There was marked diminution in normal blood and marrow cells including platelets. The diagnosis was acute leukosis.

Course.—During his period in hospital the boy received frequent transfusions as a supportive measure, penicillin for a pneumonia which developed, koagamin, vitamin C, topical thrombin, etc., for the bleeding tendency which persisted in varying degree until his death. The haemoglobin and white blood count were checked daily. Blood smears were frequently examined and the bone marrow was examined several times.

The boy received 18 mgm. of aminopterin over this period, the dose being given after consideration of his counts and smears. The white blood count dropped steadily from 341,000 to a count varying from 4,000 to 9,000. The lowest count obtained was 1,900. For the greater part of the time although the blood and marrow count remained low, the type of cells present were the immature type described above. A very favourable effect was noted for a period when normal cells appeared in quite large numbers. This was associated with quite marked improvement in his clinical state. The bleeding tendency persisted, however, and he died after continued and profuse bleeding particularly from the gastrointestinal tract.

CASE 4

T.S., boy, aged 1. Two months before his admission to hospital this boy suffered an attack of pneumonia. Following this there was extreme pallor and he received transfusions for a severe anaemia. Blood smears done elsewhere were considered diagnostic of a leukæmia. Recently the child had episodes of difficult breathing. There was marked pallor on examination, temperature 102°. There were small papules in the skin, quite generalized. There was no evidence of large glands nor an enlarged liver and spleen.

Laboratory.—Red blood cells 2,030,000; Hgb. 34.9%; white blood cells 23,800. Marrow and blood demonstrated the predominance of an immature cell with few normal cells present. The diagnosis was acute leukæmia.

Course.—The infant had previously received x-ray treatment. The white blood count had dropped from 68,000 to 28,000 on this treatment and he had apparently shown some improvement, although x-ray is not generally considered beneficial in this type of leukæmia. Aminopterin was not used until quite late because the full effect of the x-ray treatments had probably not been obtained. Two doses of aminopterin did not produce any apparent effect. The child died suddenly possibly from pressure of a thymic tumour which was indicated by a shadow in a chest film which was taken.

CASE 5

J.P., boy, aged 17 years. This boy was well until six weeks before reporting, when he noticed he was becoming more tired after exertion. This became rapidly worse. He experienced palpitation. Later he complained of a dull ache in his chest. On examination he exhibited marked pallor. There was diffuse adenopathy with many discrete, soft glands varying in size up to 1 cm.

Laboratory.—Red blood cells 3,890,000; Hgb. 77.4%; white blood cells 99,200. The blood smear showed only 1% of normal cells. The rest of the cells were abnormally large, the cytoplasm was vacuolated with some granules present. The nucleus had a fine chromatin structure and nucleoli were very evident. In the marrow there were also few normal cells. The count was 960,000, and the cells resembled those described in the blood. Platelet count 38,200. Paul Bunnell test normal. The diagnosis was acute leukæmia.

Course.—Shortly after admission the patient was started on aminopterin. During his period in hospital he received 8 mgm. of aminopterin. He was supported by transfusions, penicillin and vitamin C. At one point he received liver extract and folic acid when it was felt that toxic effects had been produced by aminopterin. The white blood count started to drop after a few days from a high of 102,000 to a low at one stage of 1,900. It might be said that no favourable effect was produced by the drug. The tendency to bleed soon became apparent and the bleeding continued until his death. Frequent checks on the marrow and blood smears revealed no significant number of normal cells. He appeared very toxic and maintained variable fever although the white blood count remained low. The hemorrhage would seem to have been accentuated by the drug. Twenty-five days after admission the patient died.

CASE 6

M.L., girl, aged 14 months. This child had been well until three weeks previous to my seeing her. She refused to try to walk although she had been making attempts before this time. Later she would not even attempt to stand, and she developed a fever. Her legs seemed very tender. On one occasion she had a severe epistaxis. On examination the child appeared very ill. The liver and spleen were quite markedly enlarged. There was no sign of bleeding at this time.

Laboratory.—Red blood cells 670,000; Hgb. 20%; white blood cells 1,950. Blood smears showed only 5% of normal cells. The red blood cells showed marked variation in size and shape with many macrocytes and microcytes. Only very few white blood cells were seen; some appeared as normal lymphocytes and others as more immature cells.

The marrow count was 110,400 per c.mm. The normal cells were very rare. The predominating cell was large with a pale cytoplasm containing azurophil granules and a large nucleus with many nucleoli. Cells varied considerably in size. The diagnosis was acute leukæmia.

Course.—The child lived only eleven days. During this time she received 5 mgm. of aminopterin. The white cell count rose from 1,950 to 3,300. This apparently was a favourable sign but there was no corresponding effect on the type of cell. Leukæmic cells were the only ones to be seen. Blood transfusions and penicillin were given as supportive treatment. A steady high fever developed and persisted. Profuse bleeding continued until her death.

CASE 7

G.M., male, aged 49 years. This man received quite a large amount of aminopterin. The diagnosis was not well substantiated although the patient had been seen by medical men here and by a haematologist in a large centre. He demonstrated a progressive severe anaemia and later leucopenia with evidence of extreme activity in the marrow. An abundance of cells in all stages of development going back to a very immature form of both red and white cells was to be found in the marrow. This could have been a myelophthisic type of anaemia with replacement of the marrow by some other disease. Aminopterin produced no effect during the several months in which he lived.

DISCUSSION

The toxic effects of aminopterin which have been reported are stomatitis, ulceration of the mucous membrane of the mouth, smooth tongue, pharyngitis, atrophic changes in the intestinal epithelium, diarrhoea, gastro-intestinal haemorrhage and depletion of bone marrow leading to aplasia. These symptoms resemble those of folic acid deficiency states and rather suggest the symptoms of pernicious anaemia. As in two of the above cases folic acid and liver extract may be used as an antidote of unknown value. Apparently stopping the drug is the most effective treatment. It is not known whether all changes produced in acute leukæmia by antagonists to folic acid are manifestations of folic acid deficiency entirely. It is suggested that interference with more important biochemical systems must obtain.

Acute leukæmia may be a form of cancer complicated by a specific deficiency state. It is said that a serious disturbance in the haemopoietic system not related to thrombocytopenia, or a series of deficiencies in the body responsible for oozing or for massive haemorrhage, might still be present in the patient with acute leukæmia even though all the leukæmic cells were destroyed. It is believed impossible to differentiate the type of these early forms of leukæmia because of the primitive nature of the blast cells found.

Infiltration of the leukæmic process is generalized but there are great variations in the degree and site of the involvement. Infiltrations in vital areas such as the heart or brain may lead to rapid unexpected death. This consideration probably accounts for the great variability in results.

It is well demonstrated in the cases described that although marked effects were produced on total counts, shifts to the normal cells were not often encountered.

The Quarterly Review of Medicine states
"The observations thus far reported indicate

that folic acid antagonists now available are of little real value in the treatment of acute leukaemia. The chief importance of this work is in encouraging a continued search for more effective preparations.'

Appreciation to Dr. Stanton Hardy of the American Cyanamid Co. through whose courtesy I was allowed a supply of this drug. To Drs. H. W. Price, G. O. Prieur, J. D. Birrell, Pearl Christie-Dowling, R. C. Riley, and Dr. Lola McLatchie.

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CASE REPORTS

ECLAMPSIA TREATED WITH CORTISONE

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F.R.C.O.G. and
H. T. McAlpine, B.A., M.D.

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The following is a case report of a severe eclamptic who was given cortisone in conjunction with our routine therapeutic management after the latter had failed to produce a satisfactory response.

H.K., a 34-year old primigravidous patient, whose expected date of delivery was August 4, was admitted to Victoria Hospital, at 7.50 p.m., on July 20, 1950, complaining of headache, blurred vision and swelling of face, hands and legs. A single prenatal examination on June 2 had shown no evidence of oedema, a blood pressure of 120/70 and normal urine. The patient had failed to keep further prenatal examination appointments. From her history, obtained on admission, she had apparently first noticed the swelling of her feet and ankles about three weeks previously. On admission, she showed generalized oedema, a blood pressure of 220/130 and a four plus albuminuria with granular and hyaline casts. She was placed on routine pre-eclamptic management, consisting of a high protein, low caloric diet and sedation as indicated.

The following day, patient spontaneously went into labour about 7 a.m. At 11 a.m. her cervix was 2 fingers dilated and the membranes were ruptured artificially. At 12.40 p.m., she had a generalized convulsion and was given 7½ gr. of sodium amytaf intravenously. At 2.15 p.m., a second convulsion was treated similarly. Progress in labour practically stopped in the late afternoon and at 8.40 p.m. the cervix was still only 2 fingers dilated and thick. Under continuous spinal anaesthesia the patient was delivered by an extraperitoneal Cesarean section of a normal living baby weighing 6 lb. 8 oz. At 9.55 p.m. patient had a clonic convulsion lasting 5 minutes and was given 7½ gr. of sodium amytaf and also 20 c.c. of 10% magnesium sulphate intravenously. During the twenty-four hours following her delivery she was kept convulsion-free by the use of magnesium sulphate in divided doses to a total dosage of 14 gm., and sodium amytaf and luminal as indicated. There was no marked change in her condition during this period. However,

about twenty-four hours after her delivery she began to deteriorate rapidly, becoming restless and irrational with an occasional minor convulsion.

By 3.45 a.m., on July 23, approximately thirty hours after her delivery, it was felt that she was *in extremis* as evidenced by a falling blood pressure, a sharp rise in temperature to 105° F. by axilla, a pulse rate of 160 per minute and Cheyne-Stokes respiration. The use of cortisone in treatment of eclampsia and severe pre-eclampsia has been under consideration by our group for several months, and it was felt this patient was a suitable case for clinical trial, particularly since she had failed to respond to our usual methods of treatment. The Department of Medical Research of the University of Western Ontario was consulted at this time and cortisone therapy was instituted, 100 mgm. being given in the 1st hour in 2 divided doses, followed by 100 mgm. at 8 hour intervals, the total dosage for the first day being 300 mgm. Intravenous magnesium sulphate therapy was continued for a further 5 hours after the institution of cortisone administration.

Following the initial cortisone injection, patient began to show signs of improvement. Her urinary output increased, her temperature and pulse rate decreased and she began to improve generally. A further 200 mgm. of cortisone in divided doses on July 24, and a single dose of 100 mgm. on July 25 was given. During this 2 day period she showed further clinical improvement, resuming oral feeding and returning to normal consciousness. Temperature, pulse and respirations returned to normal within 24 hours after initiation of cortisone treatment and have remained so until the time of writing. Albuminuria persists, but the casts have disappeared. Follow-up investigation of renal and hepatic function is being carried out in this case. It is worth noting that at no time within the first ten days after delivery was there any evidence of breast activity.

This uncontrolled study of a case of eclampsia treated with cortisone is reported for what value it may have in stimulating further investigation, and until additional studies are carried out no conclusions can be drawn.

We are grateful to Professor J. B. Collip for his valuable advice and assistance in the management of this patient. Cortisone was made available for the treatment of this patient through the courtesy of Messrs. Merck & Company of Rahway, N.J., and the National Research Council of Canada.

CUTANEOUS LEISHMANIASIS*
(Oriental Sore)

R. Roy Forsey, M.D., F.R.C.P.[C.]

Montreal, Que.

Cutaneous leishmaniasis or oriental sore is endemic in the Near and Middle East, and was encountered frequently by those who served in these theatres during the war. Forbes¹ in a recent review states that 30 cases have been reported in the United States. King Smith² reported the first four cases in Canada and later Trow³ added one more. In addition to these five cases in Canada there is an un-

* Read before the third annual meeting of the Canadian Dermatological Association in Winnipeg on June 14, 1949.

published case of Dr. J. F. Burgess, which occurred in a missionary shortly after her return from India.

Due to the increased air travel and the return of a large number of troops who have served in these endemic areas, we may expect to encounter this disease more frequently. For this reason its description bears repetition.

M.S., a 29-year old Polish immigrant, was first seen in the Dermatology Clinic at the Montreal General Hospital on April 29, 1948. He showed a dome-shaped firm swelling, fixed to both skin and underlying tissue, approximately 3 cm. in diameter, on the mid-forehead just below the hairline. The area showed considerable infiltration and on the surface there was a shallow ulceration covered with a light crust. The lesion was a dull reddish colour.

The patient stated that the lesion began about five months before (December, 1947) where he scratched the skin. The lesion was not painful but was slightly tender on pressure. He was born in Russia and lived most of his early life in Poland. He gave a history of scarlatina at the age of 6 and of typhus at the age of 13. He had some sort of eruption on his skin in 1942 but the details of this are vague. There were a few atrophic coin-shaped scars from this on his back and shoulders. In 1943 he served with the Polish Army in Palestine and later in 1944 in Italy until he was wounded. Following his discharge he came to Montreal as a restaurant worker.

He enjoyed good general health until March, 1948, when he noticed some malaise and weakness, slight cough, some sputum and occasional pain in the right chest. The patient was subsequently admitted for investigation. Except for the skin lesion, the physical examination was negative. Urinalysis was normal. The haemogram showed erythrocytes 5,000,000, leucocytes 6,800, differential: polymorphonuclears 58%, eosinophiles 4%, lymphocytes 35% and monocytes 3%. The erythrocyte sedimentation rate was normal. The tuberculin test 1:10,000 was negative but 1:1,000 was positive. The urea nitrogen was 15 mgm. %. The formol gel test was negative. The chest x-ray revealed evidence of parenchymal infiltration at both extreme apices but this were thought to be inactive. X-rays of the bones of the hand were normal. Sputum and gastric washings were negative for acid fast organisms and he was afebrile throughout the period of investigation.

A biopsy of the skin lesion was made and revealed the diagnosis. The section shows some hyperkeratosis, parakeratosis and some follicular plugging. There is some atrophy of the Malpighian layer and dissolution of the basal layer. In one area there is ulceration, the surface of which is covered with a crust consisting of polymorphonuclears, lymphocytes and an eosinophilic coagulum. The striking lesion is in the corium. The whole corium is heavily involved in a granulomatous process, consisting of an almost continuous anastomosing arrangement of sheets of large epithelioid cells which, in many places, are conglomerated into small tubercles, many of which contain multinucleated giant cells of Langhan's type. There is no caseation but in the centre of some of the epithelioid cell masses beneath the crusted areas, there are foci of necrosis with marked karyorrhexis. Between the epithelioid areas there is a heavy infiltration with lymphocytes and plasma cells, all in all resembling a tuberculous lesion. However the greater diffusion of sheets of epithelioid cells was disconcerting and inconsistent with the diagnosis of tuberculosis. On examination with the oil immersion, innumerable small parasitic inclusions are seen in the cytoplasm of the epithelioid cells. These are small, rounded or oval bodies about 5 microns or less in diameter with a nuclear-like condensation eccentrically placed in the body. They vary in number within the epithelioid cells from 1 peripherally to about 20 centrally in the cell clusters. These are typical Leishman-Donovan bodies.

Cultures were attempted, 1.5 c.c. of oxalate solution was injected into the lesion and aspirated. The aspirated material was inoculated into tubes of NNN media, but smears of this aspirate failed to show the Leishman-Donovan bodies and no growth occurred.

Three c.c. of 3% solution of emetin hydrochloride was injected into the lesion on June 22 and 30 and on July 5. Following the third treatment he developed frontal headache, oedema of the forehead and about the eyes. The centre of the lesion was covered with a thick crust at that time. The reaction persisted for about three days and then slowly subsided. On July 9 a fourth injection was made. Within 24 hours he developed marked oedema, erythema and malaise which persisted about five days. No further treatment was given. When the reaction subsided the lesion had cleared except for the biopsy scar. The lesion has remained healed and his health has been excellent since discharge.

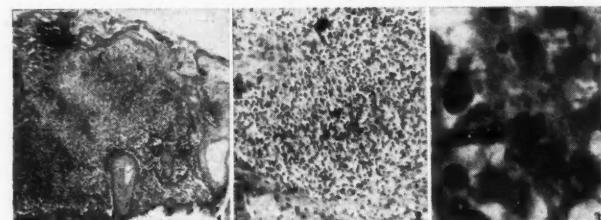


Fig. 1.—General architecture (low power).

Fig. 2.—Tuberculoid structure (high power).

Fig. 3.—The Leishman-Donovan bodies (oil immersion).

Comment.—This disease is due to the *Leishmania tropica* which are found in the epithelioid cells and the large mononuclear cells. These organisms are morphologically indistinguishable from those of kala azar. The protozoan is usually inoculated into man by an infected sandfly—*Phlebotomus papatassii*—with the dog acting as the reservoir. Packchanian⁴ reports that some six species of phlebotomus exist in the United States—mainly in the southern states—and he points out the possibility that these may become infected at some time and thus establish Leishmaniasis on this continent. Moore⁵ states that no species of phlebotomus have ever been reported in Canada so this fear may be dismissed as far as we are concerned.

The incubation period is extremely varied. One of the features of this case is its long incubation period. It must be assumed that the patient became infected while in Palestine or Italy which was between three and four years before the appearance of the lesion. Barberian⁶ investigated the problem of the incubation period and he reports three cases of artificially induced oriental sore in which the incubation periods were 18, 30 and 56 months respectively. The incubation period has been estimated from a few days by Manson-Bahr⁷ to three and a half years by Napier and Halder.⁸

Sutton and Sutton⁹ say that the lesions vary from one to seventeen and that solitary lesions

are rare. The lesions classically begin as a reddish papule which increases gradually in size, softens in the centre and ulcerates. The lesion soon becomes covered with a crust. They are asymptomatic and there is no associated adenopathy. They occur usually in the exposed areas and are autoinoculous. Constitutional symptoms are usually absent. There is a life-long immunity once the disease subsides. The disease is self-limited and spontaneous regression occurs in a variable period of time. In such cases, large characteristic stellate scars occur. The diagnosis is usually confirmed by the finding of the intercellular protozoan in smears or in biopsy specimens. These may be cultured on special NNN media by the method described by Dostrovsky and Sagher.¹⁰

There is little agreement about the treatment of choice although it is generally conceded that the course may be shortened and the cosmetic result improved with treatment. Trow³ reported good results in his case using an organic antimony compound intravenously. Sinderson¹¹ reported good results in 146 of 147 oriental sores treated with emetin hydrochloride solution, injected locally. He states that a reaction occurs following the injection, which I take to be similar to that which this patient developed. We felt that the treatment was successful in this case but that the reaction was somewhat alarming.

SUMMARY

A case of cutaneous Leishmaniasis occurring in a Polish immigrant is reported. The incubation period was about four years. The lesion was successfully treated with local injections of emetine hydrochloride and the ensuing treatment reaction is described. The disease is briefly reviewed.

I wish to thank Dr. J. F. Burgess, Dermatologist in Chief of the Montreal General Hospital for permission to publish this report, and Dr. J. E. Pritchard, Pathologist, Montreal General Hospital for his interest and assistance.

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MEGALOBLASTIC ANÆMIA OF PREGNANCY, REFRACTORY TO LIVER THERAPY, BUT RESPONDING TO FOLIC ACID*

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Apart from the normochromic physiological anæmia resulting from increased plasma volume and the hypochromic anæmia due to nutritional iron deficiency, a severe anæmia of the pernicious type has been recognized as a complication of pregnancy for over 100 years. This type has been referred to as pernicious anæmia of pregnancy or macrocytic anæmia of pregnancy. The condition is rare. Stevenson¹ in 1938 recorded the first large series, but bone marrow studies were not performed. Callender² fully reviewed the literature and added twenty-five personal cases. Davidson and associates³ had previously described sixteen cases of their own.

A survey of the literature, however, reveals that a considerable portion of these cases fail to satisfy all the criteria necessary for a diagnosis of true Addisonian pernicious anæmia. The outstanding features distinguishing this anæmia from true pernicious anæmia are the existence of free hydrochloric acid in the gastric juice and a lower frequency and degree of macrocytosis and poikilocytosis in the peripheral blood. The colour index may be under unity and the mean corpuscular volume within normal limits. A sternal puncture reveals a marrow response identical with that found in true pernicious anæmia. Davidson *et al.*³ have proposed accordingly that the term "megaloblastic anæmia of pregnancy" be substituted for the misleading term of pernicious anæmia of pregnancy, on the grounds that the megaloblastic appearance of the marrow is characteristic and constant, while the peripheral blood findings are variable. The importance of marrow analysis in all cases of severe anæmia of pregnancy is thus obvious.

Free hydrochloric acid is present in the gastric juice in about 3 out of 4 cases. In those cases with a histamine-fast achlorhydria, it may be impossible to decide whether the case should be classified as pernicious anæmia of pregnancy or Addisonian pernicious anæmia complicated by pregnancy. This distinction can be accomplished only by withholding all forms of liver therapy

* From the Department of Pathology, Toronto East General Hospital, Toronto.

and observing the haematological disorder over a period of 2 years.⁴ The peripheral blood and bone marrow changes in megaloblastic anaemia of pregnancy, spontaneously recover both completely and permanently within 5 months after delivery.

M.B., a 21-year old gravida II, was admitted to hospital on July 26, 1948, six weeks before term. She complained of considerable weakness and fatigue for one month and of almost continuous nausea and vomiting for four days prior to admission. She had no previous illnesses. Her first pregnancy was normal but resulted in the birth of a "blue baby" which only lived five days. Before her second pregnancy, her health was good and she did the housework for a family of seven adults. Her diet was one which would be considered adequate for a pregnant woman. For two months prior to admission, she had been followed in a pre-natal clinic where her physical examination, blood pressure and urinalysis were found to be normal. On her initial visit, the haemoglobin was 56% (Sahli) but she was not placed on iron therapy until a month later when her haemoglobin had fallen to 47%. She showed no response to iron, and at the time of admission to hospital, her haemoglobin was 40%. The patient was Rh positive, Group "O".

Physical examination revealed a seven and a half month, pregnant woman with a fairly marked pallor, accentuated by the increased pigmentation of pregnancy. The conjunctivæ were slightly icteric. The tongue was normal and the spleen not palpable. The heart and chest were normal. The systolic blood pressure was 117; diastolic 72.

Laboratory investigation in hospital; haemoglobin 40% (Sahli), red blood cells 1.5 million per c.mm., white blood cells 6,700 with a normal differential count. The platelet count was 104,000. The colour index was 1.3, the haematocrit 20 mm. The mean corpuscular volume was 113 cubic microns. The red blood cells showed a moderate degree of variation in size and shape. Macrocytosis was not marked and the mean corpuscular diameter measured 7.9 microns. Polychromatophilia was moderately intense with the occasional stippled cell. The reticulocyte count was 0.7%. Urinalysis showed albumin 1 plus, bile 3 plus, urobilin 3 plus, sugar and acetone negative. The icteric index was 17 units and the van den Bergh test showed a slight increase in both direct and indirect reactions. The serum albumen measured 3.5 mgm. %; serum globulin 2.6 mgm. %. There was no occult blood in the stools. Smears of the sternal marrow revealed a marked hyperplasia, with numerous clumps of typical megaloblasts and promegaloblasts (Fig. 1). A gastric test meal showed the presence of free hydrochloric acid. A diagnosis of megaloblastic anaemia of pregnancy was made.

Liver therapy consisting of 30 units of a well known liver extract was given daily via the intramuscular route. This treatment was discontinued after nine days when no change in the haemoglobin, red blood count, reticulocyte count, was evident. Pteroylglutamic (folic) acid was substituted and given orally, 20 mgm. daily. Three days later, the reticulocyte response was initiated and reached a peak of 21%, seven days after the initial dose. At this point, the marrow was found to have shifted to a normoblastic picture (Fig. 2). Concurrent with the reticulocyte response, the red blood count and haemoglobin rose quickly. On August 26, 1948, 31 days after admission, when the haemoglobin was 60% and red blood count 3.0 million, this patient had a normal labour and delivered a healthy male infant; 500 c.c. of compatible blood was administered immediately after delivery.

Following parturition, all medication was stopped. Despite this, haemoglobin and red blood count rose slowly but steadily. About 3 weeks postpartum, when the anaemia showed evidence of hypochromia, ferrous sulphate, 5 grains three times daily was given. Five months after delivery, the haemoglobin reading was 80% and the red blood cell count 4.2 million (Fig. 3).

Following admission, small amounts of bile and urobilin were present in the urine. At the onset of the reticulocyte response, these began to disappear and the icteric index returned to normal. Routine liver function tests revealed no liver dysfunction. The cause of the bilirubinuria in this case is not clear.

It might be argued by some, that the reticulocyte response was a late one and evoked by the liver. It is true that some cases of megaloblastic anaemia of pregnancy show a delayed reticulocyte response to liver therapy. However, it is more likely that the response came three days after the pteroylglutamic acid was started, than 12 days after liver therapy was begun.

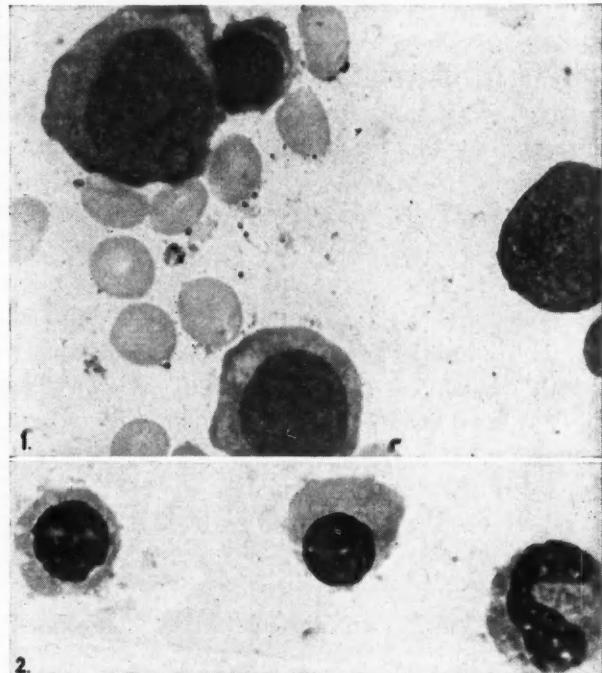


Fig. 1.—Smears of sternal marrow showing megaloblastic reaction. x900. Fig. 2.—Smears of sternal marrow showing change to normoblastic picture. x900.

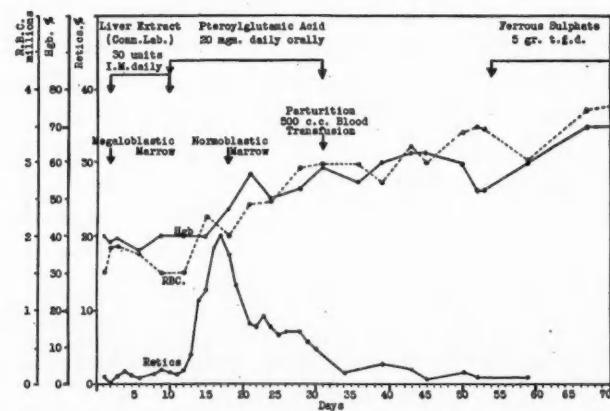


Fig. 3.—Chart illustrating blood responses to therapy.

DISCUSSION

The etiology of this anaemia is still unsettled although numerous explanations have been given. These include temporary failure of secretion in the late months of pregnancy of the intrinsic factor of Castle; reduced intake of extrinsic factor due to a poor diet, nausea and vomiting; impaired absorption from the small intestine

during pregnancy; increased demands by the fetus for the haematinic principle; and endocrine disturbance.

The onset of this unusual anaemia is usually in the third trimester of pregnancy and may be insidious or sudden. The condition is more common in multiparous patients. In addition to the general symptoms common to all anaemias, vomiting and diarrhoea may be present. Fever is common and a diagnosis of sepsis is frequently made. The spleen is palpable in about one-third of the cases reported and the tongue may be sore.

Pteroylglutamic (folie) acid is now considered the best available agent for the treatment of megaloblastic anaemia of pregnancy. The response to parenteral liver treatment may be normal, poor and delayed, or absent. Cases refractory to parenteral liver therapy may respond promptly to oral treatment with proteolyzed liver or cooked liver.⁴ A significant feature of this disorder, however, has been the refractoriness to liver treatment. These cases have now been found to respond dramatically to pteroylglutamic acid. The changes associated with successful treatment are as dramatic as those occurring in Addisonian pernicious anaemia.

Although it is frequently stated that pteroylglutamic acid is the treatment of choice in this condition, only 5 other reports have appeared in the literature.^{5 to 9} The two most recent of these publications^{8, 9} record two cases of megaloblastic anaemia of pregnancy which did not respond to treatment with vitamin B₁₂ while subsequent administration of pteroylglutamic acid induced a prompt haematopoietic and clinical response. It has now been postulated⁹ that a deficiency of pteroylglutamic acid may be responsible for the development of this condition.

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I do not know any reading more easy, more fascinating, more delightful than a catalogue.—Anatole France.

PERFORATION OF SMALL INTESTINE
BY A FRAGMENT OF CELERY*

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Montreal, Que.

A 59 year old white male in a sanatorium under treatment for advanced tuberculosis of the bones of the left foot and ankle as well as bilateral pulmonary tuberculosis, was referred to the Montreal General Hospital on June 12, 1949, with complaints of diffuse abdominal distress. There had been a sudden onset of severe upper abdominal pain six hours prior to admission. With the initial severe upper abdominal pain, there were associated nausea, and vomiting of "coffee-ground-like" material.

In January and February, 1949, he had had several attacks of lower abdominal pain; these attacks, not severe in nature, were relieved spontaneously, since when he had been free of symptoms. In the sanatorium, the patient had been receiving pneumoperitoneum treatment, the last instillation having been on June 7, and without incident. Bowel habits had always been regular, a normal movement having occurred three hours before the onset of the acute upper abdominal pain.

On admission he was dyspnoeic and complaining of abdominal pain; there were signs of dehydration. There was no abnormality in the superficial lymphatic and glandular system. The chest moved well upon respiration, but with some lag on the right side; tactile fremitus was diminished at both bases posteriorly. Temperature was 99.2° F.; pulse 120, regular and of good quality; the heart was not enlarged to percussion and the sounds were well heard, no murmurs being present; the blood pressure was 108/68. The abdomen was board-like and tender on palpation throughout, without any localization of tenderness. On rectal examination, there was bilateral pelvic tenderness. White blood count at the sanatorium was 16,000 and on admission, 12,000. Urinalysis showed only a few white blood cells.

A preoperative diagnosis of acute intestinal obstruction with perforation was made, and after Levin tube decompression of the stomach, with intravenous supportive transfusion of blood, glucose and saline, laparotomy was performed under spinal anaesthesia at 8.30 a.m. on

* From the "M" Surgical Service, Montreal General Hospital. Reported by permission of Dr. H. M. Elder, Chief-of-Service, and Dr. J. C. Sutton, Associate Surgeon.

the day of admission. The following relevant excerpt of the operative report is given:

"... the abdomen contained greenish watery fluid, the stomach, gallbladder and duodenum were examined and found to have no visible perforation. The small bowel was then picked up at the ligament of Treitz and followed downward to the lower third of the ileum where there was a perforation, exuding bowel contents. The ileum proximal to this area was thickened and edematous, that distal totally collapsed. Just distal to the perforation there was a firm annular constriction about 1½ cm. in width, occluding the lumen to palpation. Near the perforation was a small gangrenous area and this was joined in the transverse axis of the bowel. With the view thus afforded of the bowel lumen, the obstruction was seen to be due to a piece of unchewed, undigested celery, measuring approximately 2 x 1 x 1 cm. The perforation was caused by erosion through the bowel wall of one of the prongs of the U-shaped end of the celery fragment, impacted at the annular constriction, and the small gangrenous area corresponded to the position of the other prong of the celery fragment.

The obstructing celery fragment, many smaller bits and numerous other partly chewed food particles were removed from the open bowel, being forced into the opening by very active peristalsis from above; the fluid contents were removed by suction. It was now possible to pass a ½ cm. diameter probe through the constricted lumen below the area of impaction of the celery, quite adequate for the normally fluid content of the bowel at this level. The bowel wound was closed with a double layer of inverting sutures and a by-passing enter-enterostomy was performed. No biopsy was taken, but it is assumed that the annular fibrous constriction was due to a healed tuberculous ulcer of the ileum at this level."

Postoperatively, the patient's course was quite uneventful. He received supportive blood and intravenous fluids as indicated and was placed on procaine penicillin 400,000 units b.i.d. plus 0.5 gm. of dihydro-streptomycin q.6 h. On the fifth postoperative day, the Levin tube was removed and the patient commenced taking a soft diet, graduating to full ward diet on the eighth postoperative day. The patient was ready to return to the sanatorium on the fourteenth postoperative day.

UNCONTROLLABLE HIVES

(Treated by a Synthetic Adrenal-Cortex Compound)

D. M. Baltzan, M.D.

Saskatoon, Sask.

Uncontrollable hives are rare. The failure of all the common forms of treatment, singly or combined, is unusual. Success with a procedure which is an off-shoot of the current monohormonotherapeutic principles is a matter of record.

The story concerns a woman, aged 64, who had complained of a vanishing rash on the inner aspects of her thighs. It played hide-and-seek, and was not visible at the time of examination. Some days later she was sud-

denly covered by a massive urticarial rash. The reaction was explosive, causing her to faint and lose consciousness. She was admitted to the hospital on February 7, 1950, as an emergency.

The entry note reads: "hives cover the entire body, the patient felt very itchy, the eyes were puffy, the arms were swollen". Antihistamines, adrenalin, intravenous calcium, anti-pruritics and an elimination diet were prescribed. Also, suspicious contacts in the room and bedding were avoided. Transient reprieve was obtained from intravenous calcium. Adrenalin gave only slight temporary relief. The next morning another massive eruption occurred which was only lessened again by calcium and/or adrenalin. Within two hours an eruption again appeared.

A copy from the nurses' chart on the fifth day after admission is as follows: intense eruptions at 6 a.m., 12.30 p.m., 4 p.m., 6 p.m., 9 p.m., and 11 p.m. Variations in treatment included ephedrine by mouth, alternating with adrenalin in oil by injection. The exasperating course continued relentlessly. An old-fashioned standby, epsom salts treatment, was invoked. It succeeded only in producing diarrhoea which sapped her strength and left the hives untouched. The patient was to all appearances a well composed person, and behaved better than the average during the ordeal. There were no known psychological disturbances to provoke these dermatological reactions. Amytal sedation and reassurances were unrewarded.

On the sixteenth day after admission the condition was static. Her suffering was undiminished and the eruptions kept repeating. In desperation our thoughts turned to the newer concepts of treatment still in flux. We had considered that allergic manifestations, including giant urticaria and asthma, were the presenting feature in Addison's disease fairly often. Thorn reported an incidence of 10% of 100 patients seen with Addison's disease. This patient had not the common features of this disease. She was too sick to undergo the more refined tests used to make the diagnosis.

It was evident that adrenalin had only a fleeting effect, not comparable to the usual results and lasted only a little longer when given in an oily preparation. However crude the reasoning might be, it was thought one might start where, perhaps, adrenalin left off. Also, the lasting effect of adrenalin might be a

stimulus to adreno-cortical activation. Only desoxycorticosterone acetate was readily at hand, although we could have used a commercial cortical extract containing a mixture of adrenal steroids. On February 23, sixteen days after the onset, parenteral injections of 2 c.c. of percorten-Ciba were started and continued daily. At the end of the first day of the commencement of this treatment it was charted for the first time the patient had "a better day". The next day she required adrenalin four times and finished with "a good day". It was noted she was now *relieved* by adrenalin each time. On the third, fourth, and fifth day of the change in treatment, hives appeared once a day and disappeared without additional medication or were *relieved* by adrenalin. After March 2, the hives had not reappeared while under treatment.

Treatment was discontinued. Extensive investigations were undertaken in several directions. This included reconsideration of an examination made by us in 1938 when she was labelled with a diagnosis of cachexia strumipriva, with subsequent benefit by thyroid extract medication. She requires a daily maintenance dose of thyroid extract to keep fit and therefore a residue of endocrine imbalance still exists. Otherwise, no new knowledge was gained from the results of the follow-up examinations.

There is only this postscript; after cessation of treatment the urticaria reappeared and resolved immediately upon the administration of a single dose of percorten.

This experience is related because it seems the implications are even more significant than is the cure in a single case.

TRANSECTION OF THE BOWEL AT THE DUODENAL-JEJUNAL JUNCTION

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It is generally recognized that the uncommon condition of complete rupture or transection of the bowel is "fraught with danger of almost certain death if not diagnosed early, yet the signs and symptoms are often equivocal for some hours."¹ Seigel² in reporting 376 cases of ruptured small bowel, showed that the mortality increased as the time between injury and operation increased, and that after 12 hours there

was 70% mortality. Massie³ reported 34 cases of intestinal rupture without penetration of the abdominal wall. Of these, 31 cases were operated upon, with a mortality rate of 78%.

The following case is presented because it illustrates how the abdominal catastrophe can be masked by more florid signs elsewhere, and because, despite the delay in diagnosis and surgical correction of the injury, the patient fortunately recovered.

E.L., white male, aged 22, was involved in a motorcycle accident at 9.00 p.m. September 13, 1948. When seen on admission at 9.30 p.m. he was comatose. There were extensive bruises on his face and extremities. Examination of the chest and abdomen, as complete as could be carried out, was negative. There was no evidence of fracture of the limbs. Blood pressure was 100/60. The cerebro-spinal fluid was clear and under normal pressure. He roused himself occasionally and gave his name and address, but later became very restless and irrational, despite sedation. Routine head injury care was then instituted.

Throughout the night he remained restless and vomited frequently. At 2.00 a.m. he was more rational but his physical condition remained unchanged. Blood pressure 110/75. Temperature (axilla) 100, pulse 112, respirations 24. At 7.00 a.m. the nurse noted that his abdomen was tender. At 7.30 a.m., after voiding 20 ounces of clear urine, he developed excruciating pain in his abdomen, and went into shock. Blood pressure 80/0, pulse 128, respirations 28. The abdomen was rigid and board-like in character, with tenderness in the left upper quadrant. Rectal examination was negative.

X-rays of the skull and chest were negative. A flat plate of the abdomen taken in a semi-erect position, revealed considerable free air beneath both diaphragms. The stomach and one loop of small bowel were distended with gas.

Appropriate treatment for shock was commenced, and he was prepared for laparotomy. At operation, the abdomen was found to be full of blood and stomach contents. The small bowel was completely transected at the duodeno-jejunal junction, just distal to the ligament of Treitz, with a tear in the mesentery. The proximal 4 inches of the jejunum were gangrenous. No other bowel perforation was seen, but there was much bruising of the transverse colon, omentum, and posterior parietal peritoneum. Liver, spleen, kidneys, and bladder did not appear to be injured.

The gangrenous portion of jejunum was resected and the bowel reconstituted by end-to-end anastomosis. The hole in the mesentery was sutured, antibiotics instilled intra-peritoneally, and the abdominal wall closed in layers. By the fifth postoperative day he was able to tolerate a gastro-enterostomy diet. He improved rapidly and was discharged 16 days after the accident.

On October 13, he reported that he was able to eat food of any kind without discomfort. Barium series showed slight narrowing at the duodeno-jejunal junction, but the meal passed easily into the jejunum. On November 15 he returned to work and was gaining weight steadily. When last seen in October, 1949, he felt in perfect health.

Counselor and McCormack⁴ in 1935, found that in 90% of cases of intestinal rupture, the site of perforation was the small bowel, involving the duodenum in 16% of cases. The duodenum is afforded relative protection against injury in all portions, except where it crosses the spine. Rupture usually results from blast, crushing, or any blunt trauma, applied to the

right upper quadrant of the abdomen. The duodenum is compressed against the spine or is violently dragged upon at its fixed points. The sites of predilection appear to be either extremity of the duodenum, the distal extremity being involved in the present case.

Maingot⁵ in discussing rupture of the small bowel, states that often the signs and symptoms may be vague and misleading, so that the condition may remain undiagnosed. Cope¹ explains this by stating that occasionally, when a complete severance of bowel occurs, the two ends may be temporarily closed by contraction of the intestinal muscle, and its peristaltic movements are inhibited. Thus there is a lull, during which it may appear that no serious intra-abdominal lesion is present. This quiescent period is terminated when, as in the present case, some disturbance takes place, causing the intestinal contents to be emptied into the peritoneal cavity.

SUMMARY

A case of complete transection of the small bowel, in which the diagnosis was not made until eleven hours after the accident, has been reported. The reason for the delay in diagnosis must be attributed to a very confusing picture, brought about by the accompanying head injury, and the almost complete lack of signs and symptoms of bowel injury.

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SPECIAL ARTICLE

IS CANADA HEALTHY?*

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Whilst one hesitates to be "wise in retrospect", the fact remains that it is only by a review of past events can we hope for improvement in the future. When invited to address this section upon a topic of my choice, it seemed opportune to present a subject which has given me, and I am sure many others, considerable concern; namely, the widely publicized philosophy that Canada, as well as most democratic countries, was far below par as judged by the

* Read at Armed Forces Section, Canadian Medical Association, Saskatoon, Sask., June 17, 1949.

results of the physical examination of recruits for World War II. In fact we have heard and seen the term "a physically C-3 nation" applied to Canada upon many occasions, with little or no rebuttal, or explanation of what led to this complex.

Comparatively early in World War II a report was published by the Department of National War Services that 46% of those called up for training in the Canadian Army were unfit for Category "A". This received wide publicity and came as a shock to the Canadian public. In October, 1941, a somewhat similar report was released by General Louis B. Hershey, Director of the Selective Service System in the United States. This was also received with considerable consternation. Here on a continent reputed to contain a race of relative giants with athletic prowess which made itself manifest in the Olympic Games, football, hockey and all the bruising activity connected therewith, did we find almost half the population to be physically below fighting form. In spite of all that had been claimed for our modern style of living in the matter of general public health measures, these aforementioned statistics seemed to refute such beliefs!

While the statistics are not disputed, statistics without adequate interpretation can be most misleading, and this was particularly true of the rejection rate quoted in press and from platform. The resulting general feeling of uneasiness was quite unjustified. The inference that if a population was not Category "A" it was unhealthy, is obviously due to lack of discrimination between the term "fitness for military service" and the word "health". Nor was it made clear that there were other categories than "A" in which a man or woman could still wear a uniform. Flat feet and abnormal colour vision are defects but are not necessarily indicative of an unhealthy state. They might easily be a cause of rejection for certain phases of work in the fighting forces, yet be acceptable for other duties. Under a voluntary system of service a man who could not qualify for a Signal branch through defective colour vision and refused to accept a branch where colour vision did not matter, would be termed "unfit" but no one could say he was unhealthy. Many recruits were turned down as being underweight when all they required was adequate meals under suitable conditions. Others were turned down through being overweight when all they needed was a few sessions on the parade grounds to shake them out of their laziness.

However, in spite of all that has been said in many quarters the figures are not as bad as they seem. Were we to appraise national health by its proper yardstick there is no doubt that the life insurance companies could supply the answer, insofar as they reject applicants

for insurance on a basis of longevity rather than the ability of an individual to endure hardships of warfare. While one hesitates to quote figures from the sister Services, because each Service has its own standards of fitness and its own reasons for acceptance and rejection, I can tell you that from the 105,000 examinees for the Naval Service only 10.1% were rejected, and in case it is thought that this low rejection rate inferred the acceptance of sub-standard people, I can also tell you that only 3.5% of those accepted were subsequently discharged upon medical grounds. This figure would include a legitimate wastage due to active service, as well as the errors of judgment of the medical officer who perhaps could not be held responsible for the man who patriotically did not lay all his cards on the table in the recruiting depot as to his latent epilepsy, gastric ulcer or other disease which might not be apparent in an assembly-line recruit examination. While it is probably true that the Army rejection rate was higher than the Navy or Air Force, there were good reasons for this, inasmuch as they had for final appraisal the rejectees from the other two forces and the sediment in the manpower barrel when Selective Service came into operation.

It is this larger Army figure which has been quoted so often and has made its impression upon the public mind, and little or nothing was done to counteract this unfavourable reaction. In a brief on National Health Planning, prepared by the Canadian Association of Medical Students and Interns in October, 1944, and presented to the "Canadian Youth Commission" this bold statement is made:

"The present unsatisfactory state of Canada's health has been pointed out many times. Medically speaking we are a C-3 nation: out of the 1,014,498 enlistees up to January, 1944, only 452,348 were fit for front-line service."

Statements like this are as sadistic as they are unjustified, and I recall only two editorials in any of Canada's papers wherein a more favourable view was expressed and a better interpretation given upon the relation of recruit rejections to health as such. But the ghost still follows us about and as recently as three months ago I heard a C.B.C. broadcast wherein socialized or state medicine was advocated upon the hypothesis that if 40% of Canada's youth were unfit for warfare then the medical profession itself had done a very poor job in looking after Canada's population. This argument is of course fallacious and completely unfair to Canada and her doctors. It required a similar argument in the United States by the sponsors of State controlled medicine to produce a strongly worded editorial in such a powerful organ as the *Saturday Evening Post* as recently as the May 14 issue of this year. I take the liberty of quoting from the editorial, not to discuss State medicine but because the

editorial's arguments upon the value of statistics are so pertinent to the subject of this morning's discussion.

"Conspicuous among the arguments for compulsory health insurance and bureaucratic medicine is the one about the 5,000,000 young men who were rejected for military service in the most recent war. . . . Leaving aside the obvious defects in the arguments, why not look at the facts? In an article on public medicine published by *Hospital Management* for January of this year, Dr. Maurice H. Friedman, of Washington, pointed out that 'over half the defects listed are structural abnormalities rather than diseases', things like a missing finger or defective vision. . . . The 4,828,000 rejectees are broken down further by Selective Service, whose statistics include the facts that 1,522,300 were rejected as mental defectives, morons or imbeciles, 367,300 for 'musculoskeletal defects' (club foot, withered arm, and so forth), 254,800 for syphilis, 317,500 for hernias, most of them too severe for repair, 234,300 for eye defects. Add 510,500 rejections which Selective Service describes as due to 'manifestly disqualifying defects' and the total comes to 3,206,700 men, most of them rejected for causes having nothing to do with earlier medical care, except for the syphilitics who could have been treated free almost anywhere in the country. This leaves about 1,600,000 rejectees who might be described as having had inadequate medical care. It is true of course that 1,600,000 young men suffering from remediable physical defects represent a situation which needs correction. But 1,600,000 young men are not 5,000,000 young men. . . . When using figures to support an argument, it is important to use the right figures and to be reasonably sure that they have something to do with what is to be proved."

Now, were we to change the figures in the editorial to the figures applicable to Canada, the same inference can be drawn that there is little relationship between "fitness for Armed Forces" and the general state of health of the country. Apropos of this you will recall the stir that was created towards the end of, and immediately following, the war, in regard to making Canada "physically fit by physical jerks". It might seem that by Government decree we would all be made fit upon the village green, and that the exercise obtained through a lawn mower might be replaced by that provided through an organized Maypole dance. Without decrying the benefits of a physical fitness program, I should like to know how this resolves the situation regarding the rejectees who were deaf, dumb or blind; the nephritic, arthritic or paralytic; those who were maimed or mangled by motor cars. Some of these conditions date from birth, others have an unknown etiology, and all are conditions leading to rejection; but they need not have a bearing upon longevity, which is the barometer of health. Indeed, many of these conditions are probably much more prevalent in countries where there is far less health consciousness than in Canada.

Why then does our country deserve the derogatory epithet of a C-3 nation? Even in the case of such remediable defects as hernia, varicose veins and haemorrhoids, a formidable percentage of rejectees was accumulated, and almost half the war had passed before

machinery was instituted whereby repairs could be made under Government auspices and the man retained for duty. This actually turned out to be a very fine public health measure since many who were very willing to serve, readily submitted to surgery which they could not otherwise afford to have done at their own expense. If this were done gratuitously in a public clinic of a teaching hospital, they still could not afford to be idle whilst convalescing, as they had families to support. So we give credit to those who preach the gospel of adequate nutrition, of inoculations and vaccinations, and all the other worthwhile preventive medicine and public health measures which produce a healthy and happy population. This will pay dividends to the country, but let us not confuse the results with the requirements of the armed forces in time of battle.

Sufficient has been said about the statistics and their value. Let us consider what led to a rejection rate which so many considered to be too high. Need I remind you of the relatively total unpreparedness in which Canada entered World War II? Between wars the enthusiasm amongst the public for the creation of armed forces was at a very low ebb and this attitude percolated into all levels of the population, including the medical profession. Consequently, when war broke out there was an exceedingly small handful of medical officers in the three forces who were trained in the appraisal of a recruit. Physical standards as written had received little or no adjustment from World War I, nor could the effort which lay ahead in World War II be visualized, wherein manpower as such was going to become a very vital factor. In fact, rather the reverse attitude was adopted, in thinking that in a modern war only the most perfectly fit, mentally and physically, would find a place. In other words it was to be a "white collar" war; but as the war moved on through the years, this "white collar" strata became more and more difficult to acquire. Consequently some revamping of our views as to physical fitness had to take place, and towards the end of the war personnel were being accepted who should have been brought in at a much earlier stage.

But to revert to the aforementioned handful of trained medical officers on hand; these had to be immediately augmented from those in civilian practice and the more recent graduates. There was no time for practical indoctrination as to what was required physically in a service man; so the "book of words" on physical standards was widely distributed. It is safe to say that from time immemorial there has been a general feeling that service regulations are an inflexible thing from which any departure would not be tolerated; so when doctors rushed to the colours and were given a handbook of instructions in which specifications were laid down as to what constituted physical fitness,

they were very reluctant to depart one iota from the written word. No doubt there was a feeling that they might be subject to censure and held personally responsible financially, for those they admitted who subsequently had to be discharged; therefore they would take no chances in borderline cases. If the book said that varicose veins, varicocele or haemorrhoids would be a cause for rejection, not too much thought was given as to how extensive these conditions must be in order to prohibit entry. It seems that one always has to assume that the worst is bound to happen, and that all minor defects must surely become aggravated. This was particularly true in such cases as chronic otitis media which frequently eluded the examiner, and upon whom boards were subsequently written depicting all the dire things that would likely happen to them within the service as complicating features of their discharging ears. In the Navy such boards almost invariably were not approved on the grounds that these men should receive ambulatory treatment, and the complication was likely to be the exception rather than the rule. The recruit was in, so he stayed in, and there is no statistical proof that such action was not justified.

Such decisions, of course, again raised a factor which received too much consideration by medical officers; namely, the financial aspect. Following World War I the amount of money paid out in disability pensions to veterans received a great deal of prominence and the public became pensions conscious, and so did the doctors. Consequently many recruits who had some degree of disability were frequently appraised with a view to the possibility of aggravation and subsequent pensionability. It would almost seem that medical officers became watch-dogs of the Treasury. One does not advocate extravagance, but surely a sense of proportion must be retained. Nobody questioned the expenditure of billions of dollars upon ships, tanks or munitions, most of which reached the scrap heap; but there was certainly much eyebrow raising over the possibility, rather than the probability, of something untoward happening in a borderline decision regarding entry of a recruit ending in the inevitable pension! In pre-war days I was always struck with the difference in press headings pointing out the large amount of money paid annually to pensioners, and the minor notice taken of the annual deficit in a nationally owned railway—both amounts were about equal!

World War II seemed to produce another factor which was less emphasized in World War I. This was the mental and emotional status of the serviceman. The term "shellshock" during and after World War I may have been a misnomer, but nevertheless portrayed a specific condition as aside from physical infirmity or disability. While I would not deny that reason-

able prominence should be given to this aspect in the appraisal of a recruit, could it not be true that over-emphasis was placed upon a factor which is exceedingly difficult to appraise. It was always my impression when I practised civil medicine that the appraisal of a psychotic, or a person with a complex, was a matter for deep and prolonged study; and the declaration that a person was unstable would be of great importance and consequence. Just how such decisions were so rapidly arrived at in an assembly line procedure at a recruiting depot is not clear. But that might be due to my own lack of "certification" in the specialty!

However, I am not convinced that the heavy rejection rate for emotional instability truly reflects a person's ability to measure up to his responsibility in time of national crisis. We must always bear in mind that recruit examinations are a matter of immediate decision; and are not a procedure which can be appraised in prolonged fashion. Consequently, one might readily ask whether many of those who were rejected because they were considered unstable and a potential menace might not have found themselves, when exposed to good companionship, regulated living conditions, and away from the personal worries which afflict so many. When the bands play and flags fly and the marching feet give rhythm to the emotions of the soul, who knows to what extent the timid will gain courage and confidence as he becomes imbued with the thought of national duty? One often wonders whether many decorations were not won by those who were too dumb to duck, but had a strong enough urge to take on the enemy single-handed. How many such never got a chance to win a medal because he never got past a recruiting centre! I was interested to read a report of the Military Section of the American Psychiatric Convention held in Montreal some time ago. Out of 2,000 delegates this section was attended by not more than 40 or 50 doctors. Was this because the war being over our interest in mental attitudes of the serviceman has waned, or did we suffer in World War II from an exaggeration of the subject? I asked some questions, and I presume we shall have until World War III to find an answer.

Having reviewed our experience then in World War II, one must try to be constructive in case we are faced with World War III. Some effort must be made to correct the errors of the past, as well as reassure the public that the physique of Canada's youth has not entirely gone to the dogs. As stated earlier, our biggest handicap was the lack of trained medical men to make appraisal of a recruit. This, of course, could be corrected were we to expand the medical potential in our reserve forces. This means a willingness on the part of doctors to take a share in the service activities of the defence forces during times of peace and to devote at least a fraction of the time with the troops that

we spend in fishing or golfing. It is only by close association with the serviceman that we learn what the service requires from such a man. When we discover the nature of his duties, the quarters in which he lives, learn the language that he talks, and share his food, then do we know how fit he must be to perform his national obligations. Furthermore, by companionship with other officers who are not of our profession, we also learn their attitudes towards the serviceman and what they require him to do.

There are actually not a great many disabilities which exclude a man entirely from service life. It is true one hesitates to accept those with organic disease; but in many other conditions one must get away from the idea that the examiner himself is the yardstick for the normal person. Men with missing fingers could probably handle tools and machinery with a greater aptitude than many others, including a doctor, whose fingers are intact. How flat a foot should be to cause rejection should be measured by the man's vocation and his past history and not merely by inspection of an arch at a recruiting centre. When I read a board recommending discharge of a man for flat feet who claimed he couldn't walk on the steel deck of a destroyer, but learned from the board that his vocation in life was carrying 300 pound steel plates in a ship-building yard, his discharge Category "E" was not approved. In the production of "Pulhems" or other profiles, an attempt is made to facilitate decisions as to fitness for service; and by various gradings of disability, guidance is given towards appropriate employment. But whether we use categories or profiles there is no substitute for common sense, sound judgment, experience and a knowledge of service life to help an examining medical officer reach decisions as to those who may be rejected or accepted for active service when the nation is in peril.

While a more personal liaison must exist between those who employ a man and those who examine him, we must not on the other hand, permit the medical officer to be used as a medium of housecleaning the service just because certain executive officers may be too impatient or indifferent to get out of a serviceman everything that he can give. It is just as important to salvage a man after entry as it is to avoid rejecting him at a recruiting centre. Frequently the medical officer is approached to "board" out a problem child, an incorrigible or a "dumb cluck": it's so easy to get rid of an undesirable by a medical board! This of course raises the question of what constitutes medical grounds. Is the medical officer responsible for what's on the hoof or what's in the head? If incorrigibles are mentally ill people, should all jails be considered hospitals? Before a recruit reaches the medical officer he is presumed to be screened by executives and other non-medical specialists. If he has the physique of an ox but turns out to have the brains of a gnat, it is not apparent

that the medical officer should have the liability charged to his error. Other branches of the service must be responsible for their own mistakes, and they too must learn how to treat men on a non-medical basis and become imbued with the doctrine that in a war man-power must not be wasted any more than munitions. Executives must be patient and tolerant and try to find a niche for the none-too-bright, but physically well individual.

No one outside an institution is entirely valueless or unteachable; there are merely limitations upon what they can absorb. Those who cannot absorb higher mathematics can still learn how to push a wheelbarrow or wield a broom, and there are menial jobs to be done within the fighting forces! Perhaps we are too imbued with the idea that we must expect everybody to be able to accomplish the same high level requirement. Not all horses win races, but all horses can draw a wagon. On the other hand, more than once has it been necessary to remind medical officers that getting rid of a bothersome man by a medical board was not adequate treatment, when by proper measures he could be rehabilitated for a further period in order to make a greater contribution towards national preservation.

A large part of the foregoing brings us back to the controversial interpretation of the word "health" which, as stated earlier, was causing confusion over what happened in a recruiting centre. The World Health Organization has given an interpretation to the word as follows: "Health is a state of complete physical, mental and social well-being, not merely the absence of disease or infirmity." From this one might infer that to enlist a healthy recruit, the examining medical officer would have to give thought not only to soundness in wind and limb as well as mental alertness, but to the economic situation which puts a patch upon his trousers and thereby affects his morale and health. Perhaps it was as well for recruiting that this newest definition to the word "health" is of post-war origin!

A further means of reducing the rejection rate lies in the principle that the examining medical officer must have reasonable assurance from his director or higher authority that he is not expected to be infallible and that a margin of error in judgment is acceptable. Consequently, borderline cases should be given the benefit of doubt. There were two types of recruit—the man who hoped to exaggerate a minor disability to avoid service, and the man who was patriotic enough to be sincere in his desire to serve in spite of some prevailing defect. It required a sagacious medical officer to discriminate and to tip the scales so that the maximum national effort could be obtained from both types. The stereotyped standards as laid down must always be flexible enough to be subject to broad interpretation, and there

must be no fear on the part of the medical officer that he is going to have his knuckles rapped or be reprimanded should he give these regulations such interpretation. After all, regulations are meant for guidance upon relatively broad principles. They are to be applied with the wisdom which a broad medical education provides. The more experienced the medical officer or the practitioner who examines the recruit or serviceman, the sounder should be his judgment. When called upon to lean over or bend backwards, he must think nationally and consider a country's need rather than an individual's safety, for "safety first" is hardly a motto which wins battles. Neither does the country's pocketbook require consideration if we supply the correct answer to the question I must ask you in closing: "What would it profit a nation to have a physically and mentally perfect armed force, but only in such numbers as could lose a war?"

CLINICAL and LABORATORY NOTES

CAMPHORATED OIL ASPHYXIA

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A child, twenty months old, while playing on the floor, picked up a camphorated oil bottle and swallowed and aspirated some. When discovered he was unconscious and twitching but not markedly cyanosed.

This condition continued for about thirty minutes with profuse salivation (resembling acute pulmonary oedema), intermittent gasping respiration resembling the laryngeal spasm occurring occasionally during general anaesthetic.

Taken to the hospital he was placed in Trendelenburg position and the throat was aspirated. Atropine gr. 1/300 was given. Subcutaneous O₂ was started, using No. 20 short bevel needle in flank. For first few minutes O₂ was absorbed rapidly with respiration becoming quite normal and twitching and salivation clearing up.

Within five minutes O₂ was discontinued because a distended area the size of the palm of the hand (with crepitation) had appeared, indicating a surplus. At this time the child seemed quite normal except for a dazed condition. No more O₂ was required. Penicillin was given for forty-eight hours but no further complications developed.

Subcutaneous O₂ is not a new procedure. I have found it very simple, effective and convenient for home or hospital use in many types of cases, such as: laryngotracheo bronchitis (may avoid tracheotomy); status asthmaticus; pulmonary oedema (protracted); steam or fire burns with laryngeal oedema.

THE CANADIAN MEDICAL ASSOCIATION

Editorial Offices—3640 University Street, Montreal

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EDITORIAL

THE WORLD MEDICAL ASSOCIATION

WITHIN the last four years two bodies have been organized which reflect the growing sense of interdependence amongst civilized and peace-loving nations; these are the World Health Organization and the World Medical Association. They are both medical organizations, but, in brief, it may be said that the W.H.O. is a governmental agency, with international objectives of a public health nature, whilst the W.M.A. represents organized medicine on an international scale. In general, it is made up of representatives from most of the national medical organizations in countries outside of the Communist-dominated countries.

It is the W.M.A. which has the most direct significance from the point of view of the Canadian Medical Association. It is now nearly four years since the proposal for such an organization was put forward at a large, representative meeting in London, England. Our Association took part in the plan to an extent which may best be gauged by the fact that our General Secretary was chosen as Chairman of the Organizing Committee, and still is Chairman of the Council.

What is the object of the W.M.A., and to what extent is it justifying its existence, for it must be realized that it costs both money and the time of busy men? We have our own problems at home and they are becoming more and more complex. But if the events of the last ten years have done nothing else they have shown how impossible it is for any country to separate itself from the rest of the world. And the interest in each other cannot be merely passive observation, in the field of medicine at any rate. It is a significant fact that practically the only surviving vestige of the former League of Nations is the section concerned with international health. It is true that this aspect has been taken over by the W.H.O.; but there are still immense tasks in the advancement of medicine in the world at large. Only by such an organization as the W.H.O., for instance, is it possible to assess the difficulties which beset vast areas of the world, where the conditions of living are

almost incredibly bad. These cannot remain the problem of only the one country, for each alone is unable to deal with them. For example, there are many large areas which are unable to raise their standards of medical care for lack of facilities to train practitioners, and yet it is in these areas that the need for doctors is most acute. Here is an instance in which the W.M.A. has a high potential capacity to help and is actually helping already. Another immediate result of its work has been the general acceptance of the Hippocratic Oath in countries where before it was not included in medical training. The W.M.A. has also recorded its deep sense of revulsion against the war crimes committed in the name of medical research under the régime of Hitler in Germany. It is worthy of note that at the Council meeting, held in Copenhagen in April of this year, the W.M.A. received representations from the physicians of Western Germany, numbering some 18,000, to the effect that they fully admitted the degree to which the German medical profession had allowed itself to be degraded by the passive acceptance of the crimes referred to. They also petitioned to be allowed to ally themselves with the work of the W.M.A.

But, after all, the W.M.A. is only in its infancy. What it has done is only a beginning, and that under the severe difficulties of post-war stress. It is quite obvious that there are world medical affairs as such. It is just as necessary to have a voice in the direction of these affairs as in those of one's own country. Perhaps the most striking aspect of the W.M.A. is that it has no axe to grind save one—the promotion of better health for all the people of the world. No other objective could more completely justify its existence, or more readily recommend its support to our profession.

EDITORIAL COMMENT

The Section of General Practice

Our annual meetings in Halifax have had in past years special historic aspects. In 1921 the reconstruction of the Association began; in 1938 Federation took shape. This year had no such historic milestone; but there were significant developments in the Section of General Practice. Discussions both official and otherwise showed that there are difficulties in the field of general practice. The inevitable growth of specialism is partly responsible; but not

entirely: the need for freer use of hospitals is another factor: the maintenance of high standards of work in general practice is one of the chief causes for concern. There is apprehension that the general practitioner may cease to function as the essential element in caring for the family. And how shall he be replaced?

The underlying feeling was, not that the general practitioners should become a separate body in any sense; but that they should so strive from within their own numbers as to maintain the highest standards of work. This will mean just as much continued effort as is involved in any degree of specialization, if not more. Just how such aims are to be carried out is being carefully studied, and we hope to show what is being done from time to time. In the present issue some excellent comments are contained in a letter from Dr. J. H. MacDermot of Vancouver. We would be glad of further communications on the subject.

ASSOCIATION NOTES

PRESIDENTIAL ADDRESS*

Norman H. Gosse, M.D.

Halifax, N.S.

One cannot accept the insignia of this Office without expressing one's thanks for the great honour which it conveys. And while such thanks are for all my Canadian confrères, I am sure you will accord me the privilege of giving special prominence in my thanks to my Nova Scotian fellow-members whose nomination made this honour possible.

The act which you have now witnessed however, means little or nothing with respect to any individual person. Rather, I feel, it is designed to centre our thinking upon the institution which we serve—the Canadian Medical Association—the institution which once was little known and of little apparent significance, but which has grown—like the grain of mustard seed—and spread wide its branches, to be of very great potential in the social life of Canada.

And tonight it should centre our thinking also, upon those great predecessors in this office whose foresight, courage, faith and self-sacrificing labour laid for this association such an enduring foundation, and who made such wise contributions to its superstructure. Tonight as doctors we think of those men with pride and thankfulness. One of them was an expatriate, of my own stripe, who was elected president in 1890—sixty years ago. I hope that, now that the oldest colony has become

* Address at the Annual Meeting, Canadian Medical Association, Halifax, June 21, 1950.

the newest province, it will not be sixty years before Newfoundland will have produced again for Canadian Medicine as bonnie a fighter as was Sir Thomas Roddick.

But what is this institution, and upon what does it support any claim to your respect, your regard or the honour of your presence? It is of course an association of the doctors of Canada; and it is a very democratic institution, in which a member in the remotest village may speak and make himself heard at any level he chooses. It is the medium of expression for the conscience of Canadian Medicine. It meets once a year in the home of, and on the invitation of, one of its constituent provincial divisions; and this is its 81st annual meeting.

The purpose or purposes of its meetings are many, and with the general evolution of thought over the years, they have varied considerably. Common to all periods has been the



(Photo by Wm. Notman & Son, Montreal)

Dr. Norman H. Gosse
President
The Canadian Medical Association

exchange of ideas contributing to the advance of the Art and Science of Medicine, but while at one time meetings were simple as being devoted largely to that, the greater consciousness of our Social significance, has made many additions to and changes in our deliberations.

If we would consider some of these conditions and changes in thought and would go back far enough in history, we would find some of them to be very great. We would find the sons of Asklepios treating the wounds of the soldiers before Troy, but, as exponents of the healing art they would be having nothing to do with the treatment of disease. You will remember too in Plato's "Republic" how Socrates in developing his ideas of the perfect community would have his doctors treat only those who could be promptly rehabilitated.

His doctors were to be men who did not subscribe to the idea of coddling and keeping alive persons who would make no useful contribution to Society. People had no right to be sick,—it came of improper living—or, getting sick, they should die without benefit of doctor!

But the Christian ethic with its concept of the sacredness of human life has changed all that. True there is, every now and then, someone who would loosen the silver cord, but this does not affect the course of Medicine any more than did the defection of Judas affect adversely the course of Christianity. For it is apparent that since the time of Hippocrates—with many ups and downs it is true—our business and consideration has been the prevention and alleviation of suffering, our greatest objective the preservation of human life. There are times now, I am sure, when, in our more human moments, we would like to think of the alleviation of suffering and the cure of disease as our only business, to be practised in the earliest simplicity of the family doctor. But the impact of that same Christian ethic, and the sense of social responsibility which stems from it has led to a greater widening of our interest and a great assumption of responsibility which requires that each man in his turn must play other parts.

Many, perhaps even of our own members, do not realize how many are the parts we are called upon to play, or they simply take them for granted; but last year at Saskatoon in a meeting of General Council, where our activity was only of the customary order, one of the most experienced of the Newfoundland delegates and a much-travelled man, seeing us in action for the first time, made remarks to me on more than one occasion as we sat together, such as: "I am amazed at the tremendous activity of this body". "I had no idea this organization did so much". What was he seeing? At that time, largely reports of committees.

Among the committees reporting was that on Pharmacy, which concerns itself with the regulation of the sale of dangerous drugs. The public has no appreciation of the protection conferred upon it by the watchfulness of this Committee. Then there was the Committee on Education; concerned with keeping up the standard of pre-medical and medical training, yet it is also anxious to preserve a balance between the country's need for doctors and the quality of medical service which they should be trained to give. The net result is, that among the nations of the world, Canada is up near the top in doctors per thousand of population, while in quality it compares very favourably with the best of them.

In this regard it should be remembered, that it was out of his appreciation of this as a proper function of our association, that Roddick,

previously mentioned, sixty years ago fought against tremendous odds for legislation setting up the Medical Council of Canada,—the body which establishes uniform medical standards for the whole of Canada. The fight for that legislation was long, but he won, against the prediction of some of the most prominent men of his time, including Sir Charles Tupper. That great accomplishment we now accept as an essential part of our social order, probably without a thought as to its origin. A further example of our concept and of our exercise of this function belongs to our own day, and is found in the setting up of the Royal College of Physicians and Surgeons of Canada, which, in turn, has set up and from time to time advances, the standard of specialization in Medicine and Surgery, as a further protection to the people of Canada.

This Association has maintained for many years a Committee on Cancer, and through its operation 12 years ago, there was brought into being the Canadian Cancer Society, to carry on its work in that important department of health.

The Association has also an active Committee on Arthritis which, at the expense of the Association, has recently completed a very fine survey of the treatment facilities for Arthritis in all the provinces.

Time does not permit a similar listing of all the Association's activities and of the working Committees that report from year to year. I am sure however, that our lay friends would like me to deal with one other, and so to expose the way in which the Association contrives to exercise its avarice in the matter of the extraction of fees from the pockets of the public! If any committee were to be assigned the study and development of such a subject it naturally would be the Committee on Economics. Each province has such a committee, and a short time ago I was induced to associate myself with the subject of medical economics in Nova Scotia. This soon led to contamination in the national realm as well; and what do you think I found there? Men from the different provinces leaving their practices so that they could attend meetings at some central point, sitting around a table for days together, considering how best to extend medical services to all our people and how best to spread the cost of medical care! And we have the spectacle of measures having been adopted to that end in full knowledge of the fact that those measures invariably lead to lower, rather than to higher fees for themselves.

It has been my pleasure, as a relative newcomer, to take note of the quality of those men whom Canadian medicine sends to represent her in the Councils of the Association—men who, frequently for years, have made great sacrifices for the opportunity to serve alike our profession and our people. I spoke to one such

man,—one who was making an outstanding contribution—of the great loss of time that his work involved. He acknowledged it, and said "My wife thinks I am the biggest fool in . . ." (naming the province). Now at the very considerable risk of meeting him as I leave this building, with a club in his hand, I am obliged to say that I think she was probably right! In agreeing with her however, I have in mind the ancient saying: "It is useless for a sober man to knock at the door of the Muses", for it is indeed only to such "foolish" men that there comes the inspiration which makes for good counsel and wise leadership. Thank God therefore, for our fools! "Discontented with the Divine discontent" they have striven for and have seen widely applied the great advances in medical knowledge, and have indicated the means by which their application may be further extended to the common good.

It is my belief that in such exercises those men could be reasonably happy; but just as in the Garden of Eden there was the serpent, so here and there do we find in our day, those, with the same urge to evil,

"Who for their bellies' sake,
Would creep and intrude and climb into the fold."

Because of this, it has become necessary to divert some time and thought to the business of guarding our heritage, to ensure that the beneficent evolution of medicine be not retarded by enforced subservience to either the false god of paternalism or to the equally dangerous one of bureaucratic power. No such power could, by any amount of thought, add one cubit to medicine's essential stature, but there is evidence that in proportion as such control is exercised its evolution is retarded, its stature reduced.

Organized medicine in many ways and in many places in this country has shown and continues to show its readiness and its desire to co-operate with any body or group in support of measures properly designed to extend the benefits of medicine to our people; but unfortunately, it is sometimes found that no measures for advance are acceptable unless with them go the "gift of the keys"—the power to bind and loose the members of this body; which reminds one of Milton again:

"Of other care they little reckoning make
Than how to scramble at the shearer's feast!"

The lust for power is so apparent, but we are not yet ready for the shearer!

No great institution, be it as chaste as ice, or as pure as snow, may expect to escape "the whips and scorns of time"; or, in good Maritime language, may expect to escape such squalls—most of which with us are local—before coming again into better weather. Even now, from out of the welter of nonsense

that has been heard, there comes the still small voice of wisdom which seeks to utilize our knowledge and our experience, and in that harmony which is born of reason, to co-operate in the great social contribution which medicine is making to our time, and which only medicine can make for many a day. To continue to make and to extend this contribution in an atmosphere of goodwill, is our "bounden duty and service". To it, in fact, this body is now committed.

* * *

"Uneasy lies the head that wears a crown" could, with privilege, be translated into "Uneasy lies the breast that wears the insignia of Office". That quotation however, came from the days of the absolute monarch. In our day, and in this democratic institution, there can be no such uneasiness; for with the consciousness that we have of our obligation to society, and with the phalanx of men about us who so unselfishly endeavour to express that obligation, we are inspired to feel: "Come the four corners of the world in arms", we know our duty, and by God's grace we shall command our destiny!

PHYSICIANS' ART SALON

This was the 6th showing of the Physicians' Art Salon, an exhibition of photography and fine art created by Canadian physicians and undergraduates, and sponsored by the Montreal pharmaceutical firm, Frank W. Horner Limited. This year, over 100 physicians and students submitted work in the three classes. A new section called "The Palette Club" was created. In this class were those who had won a first prize in previous years' showings. Prizes were awarded in all three classes and were fairly well distributed throughout Canada. The presentation of prizes took place at a garden party on June 21 with Mrs. Angus L. MacDonald awarding the prizes and certificates. Next year's salon will take place in Montreal and will coincide with the annual meeting of the Canadian Medical Association. The following were the prizewinners: there were also five awards of merit in each class.

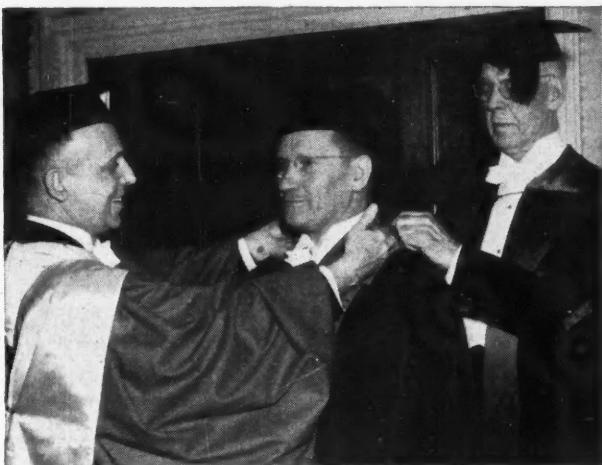
Fine Art.—1st prize: D. G. Watson, Port Credit, Ont.—*The Mill, Meadowvale*. 2nd prize: Dr. F. Dean Kemper, Toronto, Ont.—*Cinderella*. 3rd prize: Dr. T. E. Brown, Lethbridge, Alta.—*Snow Fence*.

Monochrome Photography.—1st prize: Dr. A. L. Murphy, Halifax, N.S.—*Crisis*. 2nd prize: Dr. F. E. Wait, Saskatoon, Sask.—*Farm in Wales*. 3rd prize: Dr. E. V. Spackman, Lethbridge, Alta.—*Morning Shadows*.

Colour Photography.—1st prize: Dr. H. S. Everett, St. Stephen, N.B.—*Rainbow*. 2nd prize: Dr. R. Matiko, Port Alice, B.C.—*Winter Quiet Storm Approacheth*. 3rd prize: Dr. Hugh Stanfield, Vancouver, B.C.—*Promise*.

ANNUAL MEETING NOTES

The accompanying illustrations are a few aspects of the Convention at Halifax this June.



(Photos by Nott & Merrill, Toronto)

The Changing of the Guard.

Dr. J. F. C. Anderson places the badge of office round Dr. N. H. Gosse's neck, ably assisted by Dr. Harris McPhedran, Chairman of Council. Dr. Anderson shows no signs of depression on the completion of his heavy presidential year's work.

Mrs. Ray MacLean at home—with young visitors to the Convention!

* * *

PHYSICIANS' ART SALON

"Snow Fantasy" by Dr. L. J. Notkin, Montreal, Que. Award of Merit, Mono-chrome Photography.

"The Mill, Meadowvale" by Mr. D. G. Watson, Port Credit, Ont. First Prize, Fine Art.



MEDICAL SOCIETIES

Canadian Dermatological Association

The Fourth Annual Meeting of the Canadian Dermatological Association was held at the Chateau Frontenac, Quebec, on June 9 and 10, 1950. Dr. G. S. Williamson, of Ottawa, presided. There were forty-two members and guests present. The following papers were presented. (1) Tuberculosis of the Skin and Bones in Indians, Drs. E. Gaumond and Therrien, Quebec. (2) Some Reflections of the Pathogenesis of Eczema, Dr. F. Cormia, New York. (3) Loeffler's Syndrome due to Iodine, Dr. B. Usher, Montreal. (4) H-Ion Concentration of Normal and Diseased Skin, Dr. A. L. Hudson, Toronto. (5) Consideration of Industrial Dermatitis, Dr. M. Beaudry, Quebec. (6) Treatment of Psoriasis with Undecylic Acid by Mouth, Dr. N. Wrong, Toronto. (7) Acne-Studies in Fat Metabolism, Dr. C. J. Fournier, Montreal. (8) Sarcoid-like Eruption Following Vitamin D-Therapy of Arthritis, Drs. J. Grandbois and E. Gaumond, Quebec. (9) Cutaneous and Systemic Reactions caused by Trimethadione, Dr. R. Forsey, Montreal. (10) Film-Xeroderma Pigmentosum—6 cases in the same family, Dr. E. Gaumond, Quebec. (11) Bacitracin Ointment in the Treatment of Superficial Skin Infections, Drs. Hair, Hudson, Smith and Wrong, Toronto. (12) Early History of Canadian Dermatological Association, Dr. D. E. H. Cleveland, Vancouver. (13) Eosinophilic Tumours of the Skin, Dr. H. C. Hair, Toronto.

A clinical meeting was held at the Hotel Dieu Hospital on the afternoon of June 9, under the direction of Dr. E. Gaumond and his Quebec colleagues.

The following executive was elected. *President*—Dr. E. Gaumond, Quebec; *Vice-President*—Dr. P. Poirier, Montreal; *Secretary-Treasurer*—Dr. S. E. Grimes, Ottawa. The 1951 meeting is to be held at the Seigniory Club on June 18 and 19, preceding the Sectional meeting in Montreal.

The Canadian Neurological Society

The Canadian Neurological Society met in Halifax on June 18-19, 1950. There was a good attendance, the scientific program was excellent, and the Halifax members had arranged an entertainment program which was thoroughly enjoyed by the Society.

At the business meeting, Sir Hugh Cairns was elected an Honorary Member of the Society. The following officers for the year 1950-51 were elected:

Executive: *Past President*—Clifford Richardson; *President*—Frank Turnbull; *Vice-President*—Donald McEachern; *Secretary-Treasurer*—Allan Walters.

Council: G. L. Adamson, C. A. Gauthier, H. H. Hyland, H. H. Hepburn, H. H. Jasper, E. A. Linell, K. G. McKenzie, J. Saucier, W. D. Stevenson.

CANADIAN ARMED FORCES

News of the Medical Services

Surgeon Commander T. B. McLean, R.C.N., will begin a one year course in Orthopaedic Surgery in the U.S. Naval Hospital, San Diego, California, August 1, 1950. He will be succeeded as Command Medical Officer, Pacific Coast, by Surgeon Commander G. W. Chapman, R.C.N.

Surgeon Lieutenant Commander J. C. Gray, R.C.N., has been appointed to *H.M.C.S. Cayuga* as Senior Medical Officer of the Canadian Destroyer Group proceeding on active service in Korea. Surgeon Lieutenant V. S. Newman, R.C.N., and Surgeon Lieutenant R. B. Ramsay, R.C.N.(R.), of Montreal, are serving in *H.M.C.S. Sioux* and *Athabaskan*, respectively.

Surgeon Lieutenant Commander V. P. L. Connolly, R.C.N., and Surgeon Lieutenant D. G. Woods, R.C.N., have recently completed a three months' course in Physiological Aspects of Diving, at the U.S. Naval School, Deep Sea Divers, in Washington. Surgeon Lieutenant Commander Connolly has taken up an appointment in *H.M.C.S. Magnificent*.

Surgeon Lieutenant H. D. Oliver, R.C.N., is proceeding on a Flight Surgeon's Course at the U.S. Naval School of Aviation Medicine, Pensacola, Florida. He will be succeeded at the R.C.N. Air Station, Dartmouth, N.S., by Surgeon Lieutenant Commander F. C. Jones, R.C.N.

From the 1950 graduating class in Medicine of the University of Toronto, the following veterans have been granted commissions as Surgeon Lieutenants in the Royal Canadian Navy: V. S. Newman; R. B. Irwin; G. R. Holmes; C. Konyer; W. J. D. Cooke; R. E. Stewart; D. V. Willoughby; D. W. Brooks.

Major F. C. R. Chalke, R.C.A.M.C., following a year's postgraduate study at the Menninger Clinic, Topeka, Kansas, has resumed his appointment as adviser in psychiatry in the Directorate of Medical Services (Army), Ottawa, Ontario.

Lieut.-Col. E. J. Young, R.C.A.M.C., formerly Assistant Medical Director in charge of Preventive Medicine in the Directorate of Medical Services (Army), has been posted to Edmonton, Alberta, as Command Medical Officer, Western Command. He replaced Lieut.-Col. T. M. Brown, who has been posted to the Directorate of Medical Services.

The following army medical officers have recently received diplomas in public health; Major M. Fitch, R.C.A.M.C., School of Hygiene, University of Toronto; Major P. H. Bazinet, R.C.A.M.C., University of Montreal.

Captain G. L. Stoker, R.C.A.M.C., and Captain W. A. Reed have been promoted to the rank of Major.

Over a hundred Naval, Military and Air Force Medical and Dental Officers, representing Canada, the United Kingdom, and the United States attended a six-day meeting in Montreal of the U.S. Armed Forces Materiel Group July 19 to 23. The object of the meeting, the sixth of its kind, and the first to be held outside the U.S.A., was to review field medical and dental equipment for the Armed Forces of the three countries and discuss ways and means of common usage, supply and where possible, procedures. It was held at the Medical-Dental Armouries on St. Urbain St., upon the invitation of Minister of National Defence the Hon. Brooke Claxton, who was represented at the meeting by Dr. O. M. Solandt, Chairman of the Defence Research Board. Dr. R. L. Meiling, Director of Medical Services for the U.S. Department of Defence was to have represented U.S. Defence Secretary Louis Johnson but due to the pressure of duties had to send his regrets.

Following address of welcome by Dr. Solandt and Major General R. O. G. Morton, C.B.E., General Officer Commanding, Quebec Command, and a review of the group organization and guidance comments by other senior officials, the meeting took up such subjects as Arctic clothing at sea, medical equipment in the Arctic, Arctic survival, pharmaceutical supply units, field surgical units, field dental units, field malaria and epidemic disease control units and field veterinary units. Panels also considered field radiographic and laboratory work and antisepsics.

CORRESPONDENCE

Prothrombin Estimation

To the Editor:

Dr. L. B. Jaques in his answer to my letter in the July number of the Journal reiterates the statement: "As emphasized by Link, the procedure of Quick is not satisfactory for following the action of dicoumarol", and then adds: "This statement was presented as a summary of what in our opinion appears to be the general view expressed in the current literature on this matter."

Since these uncritical statements are apt to influence the safety of many patients, I am compelled to challenge their soundness. I shall quote only two references to show that they do not express the general view. Dr. I. F. Duff from the University Hospital, University of Michigan writes: "Accurate daily measurement of prothrombin activity is essential for safe and effective administration of dicoumarol. In our experience the unmodified Quick test is reliable for this purpose. . . Simultaneous determinations of the prothrombin time of plasma diluted with saline to 12.5% (Link-Shapiro technique in part) were made in half of these cases. This was discontinued because it added little information to the standard Quick procedure" (*Angiology*, 1: 170, 1950). Dr. H. Lempert from Manchester, England writes: "My conclusions are, therefore, that the most reliable method for the control of dicoumarol therapy is the daily estimation of prothrombin concentration (sometimes called prothrombin activity) by means of Quick's method, in which the source of thromboplastin is acetone-dried brain" (*Brit. M. J.*, 1: 125, 1948). I shall be happy to furnish many additional references with similar views as those of Drs. Duff and Lempert if either Dr. Jaques or the editor desires them.

ARMAND J. QUICK

Department of Biochemistry,
Marquette University School of Medicine,
Milwaukee, Wisconsin, July 31, 1950.

The General Practitioner Speaks

To the Editor:

First, what you say about general practitioners and their "resentment" against specialist groups*—I do not think we have any resentment against them; it is a more positive feeling than that. It is that, while we are quite willing that they should have *their* hospital privileges, we want to have *ours* as well. It goes back a lot further than that. The patient is the person to be considered, not the specialist or the G.P. What I mean by that is this: nobody can practise medicine today properly without access to a hospital. How can you treat a diabetic, or a coronary, or any real medical condition, without using a hospital, at first at any rate? (I say nothing of the surgery which a competent G.P. can do just as well as a specialist can, and which he must be allowed to do, within his capacities.) That is the first point, that neither G.P. nor specialist can practise properly, unless he is allowed what you refer to as "hospital privileges". I would prefer to say "the use of a hospital", as one of his major tools, as you put it.

The next point is one that we often seem to overlook: that is the fact that from 85 to 90% of sick people go first to a G.P. It is of vital importance that the said G.P. be as competent a diagnostician as possible. Now, without access to a hospital, and the constant intercourse with other men, the opportunity to follow up one's diagnosis and check and correct it, a G.P. degenerates. He

becomes merely a clogged filter. You will almost certainly concede that.

I have been a G.P. for forty-one years now or more, and during that time I have always had full access to hospitals, operating rooms, labs, x-rays and the post-mortem room. So my work has been interesting, and I meet other men, many, if not most of them, better than myself. We discuss cases, see them together, exchange knowledge, etc. That has always been the way here, and I am open to a small bet that most of the G.P.s here are amazingly competent. Many of us do a certain amount of surgery. I have always done most of my own. I do not try work that obviously a specialist should do; but I have a liking for surgery, and through the years have acquired a certain limited dexterity. Surgery, by which I mean operating, is merely a technical skill anyway, and I see specialists doing operations at times, not any less fumblingly than some of the G.P.s. But what I am trying to get at is that if you want to have a large number of competent G.P.s—and they are the first line of defence—you must give them hospital facilities.

Then there is this point: we have here, at any rate, scores of men who have certificates in surgery, gynaecology and what-not, doing general practice all the time. It would be quite unfair and dishonest for them to call themselves specialists. They hope, or intend, to be someday; meanwhile, *il faut vivre*.

And lastly, the emphasis is, I think, swinging away from specialists to a certain extent. I don't mind saying here that I think the modern way of taking interns *ab ovo*, or rather still *in ovo*, and making them into surgeons, or eye men, or g.u. men, and so on, is entirely wrong. How does a man in his fourth or intern year know that ultimately he wouldn't be better in some other specialty? And what about his contact with human beings? A sick man or woman is not case 116 or 118; it is Mr. Robert Jones, who overeats and does not take exercise, and has business worries, and a wife who nags him; or it is Mrs. Sadie Brown, who has too many children, and not enough money, and has no holidays, and flat feet. The G.P. has to know all these things; the specialist neither knows nor cares; and so he does not help the patient as much as he should. Only through general practice can he learn. And so I rejoice that so many highly certificated younger men have to go through the mill of general practice. I think every man should; not because I am a G.P., but because I know from forty-one years' experience that the most useful specialists I have known have been men that have been G.P.'s first, that gradually discovered what they were best at, and liked best, and then limited their practice. And no amount of tosh talked by specialists will ever convince me otherwise. We all tend to forget that medicine is, or should be, a *healing art*, and healing means a lot more than the application of techniques, be the application never so skilful.

When we talk about health insurance or a wider availability of medical care, we should not be thinking merely of specialist care. What is needed is more general care. Now this throws a responsibility on us G.P.s. We are by no means all white, nor the specialists all black. The latter have their stones to throw, too. If we are going to organize as a group, and demand this and that, we must show our good faith by making ourselves better G.P.s, doing better office examinations, making better diagnoses, calling in consultants and specialists more frequently and readily, and both sides must be willing to work together all the time.

J. H. MACDERMOT

Vancouver, B.C.



* This was a private comment re the General Practitioner Section.—EDITOR.

SPECIAL CORRESPONDENCE

The London Letter

(From our own correspondent)

B.M.A. ANNUAL MEETING

Frustration, as the *Lancet* has stressed, was probably the predominant note of the annual meeting of the British Medical Association last month. The sequel to frustration is either apathy or revolt, and if one were to be bold enough to prognosticate in such matters, the impression is that apathy was already becoming apparent. Approval was given to the proposal mentioned in this correspondence last month that plans should be drawn up for a withdrawal of general practitioners from the national health service should their claims for remuneration not be settled within a reasonable time. Most of the time, however, was taken up with such matters as the demand for private patients to be able to receive free medicine and appliances in the same way as national health service patients, the right for a practitioner to lodge complaints against patients who make frivolous or vexatious demands on his services, and increased representation on the boards of local hospitals. One interesting decision was to set up a committee to draft "a reasoned program" of reform in the national health service. Whether yet another committee, with its corollary of yet another report, is really necessary may be open to doubt. There are certainly many general practitioners who feel that the whole ground has been so well covered that a further committee is redundant.

On the personal side the most interesting incident of the meetings was the announcement that Dr. Charles Hill was resigning from the secretaryship of the Association so that he can devote his full energy to Parliamentary affairs. Dr. Hill was elected a Member of Parliament at the last general election. In April he was granted by the Association "such leave of absence as is necessary for the full and efficient performance of his Parliamentary duties".

INTERNATIONAL CONGRESSES

This is the season of international congresses, and London has once again had its full share. The two outstanding ones, which met in successive weeks, were the Sixteenth International Congress of Ophthalmology and the Sixth International Congress of Radiology. The former, last held in London in 1872, was presided over by Sir Stewart Duke-Elder, and was attended by over a thousand members from 69 different countries. There was the usual intensive scientific and social programs—more than 140 communications were read. One of the striking features of the Congress was the high standard and the wide range of exhibitions, covering all aspects of ophthalmology from the highly technical to the intensely practical. One of the most outstanding and carefully planned of these was that dealing with industrial and social ophthalmology. The radiological congress, which met under the presidency of Dr. Ralston Paterson, was on an even larger scale—with 2,700 members from 54 countries. Once again, the standard of exhibition was of a particularly high standard.

While the ophthalmologists and radiologists turned up in their thousands, the anatomists responded nobly by turning up in their hundreds for the International Congress of Anatomists which met at Oxford under the presidency of Professor Le Gros Clark—550 delegates from 36 countries. One practical outcome of this congress is that yet another attempt is to be made to solve the vexed problem of anatomical terminology. The president was asked to approach the various national anatomical societies with an invitation to appoint representatives to a committee to discuss the possibilities of agreeing on an international system of terminology.

THE TUBERCULOSIS PROBLEM

A growing sense of urgency concerning the tuberculosis problem is becoming evident throughout the

country, although, unfortunately, there is little evidence of the Ministry of Health taking any adequate action. Of the seriousness of the problem there can be no doubt—11,000 tuberculous patients awaiting admission to sanatoria, and the waiting period often extending up to a year. One authority, writing in the *Bulletin* of the National Association for the Prevention of Tuberculosis (June, 1950), has described the present state of affairs as "a raging scandal", whilst a report of a joint committee of the Central Consultants' and Specialists' Committee in Scotland and the Tuberculosis Committee of Scotland, published recently in *The British Medical Journal* (July 8, 1950) records "the strong impression . . . that there is lacking any general appreciation of the urgency of the problem and of the need for a real emergency drive to deal with it". The current issue of *The Practitioner* (August, 1950) refers to it as "the tuberculosis tragedy". Typical of the Ministry's apparent inability to appreciate the seriousness of the situation is the Minister of Health's persistent refusal to make use of the 1,000 vacant sanatoria beds in Switzerland. This suggestion, discussed in detail in an article in *The Spectator* (July 7, 1950) and which has received strong backing from various quarters, e.g., Mr. Walter Elliot and Dr. Charles Hill, two of the leading medical members of Parliament, in a letter to *The Times* (July 28, 1950), is clearly only an emergency measure, but in a situation as desperate as this, such measures are indicated. To be able to remove 1,000 patients from the waiting list at one time would at least be a step in the right direction. One is coming rapidly to the conclusion, however, that a sense of urgency is foreign to the bureaucratic mind except under the overpowering compulsion of a world war and a dynamic personality of the type of Mr. Churchill. WILLIAM A. R. THOMSON London, August, 1950.

ABSTRACTS FROM CURRENT LITERATURE

Medicine

The Surgical Significance of Acute Abdominal Pain.
Hinton, J. W.: *New England J. Med.*, **242**: 489, 1950.

Acute abdominal pain is due to one of three causes, anxiety neurosis, physiologic conditions such as painful ovulation, and true organic disease. Psychogenic pain is the type which is most frequently overlooked and the fact that so many of these patients are subjected to unnecessary operations is a reflection on medical teaching. Every effort should be made to avoid operating upon the psychoneurotic patient as the ultimate results are decidedly harmful. Operations should likewise be avoided in patients having physiologic conditions such as intermenstrual pain.

In the presence of acute organic conditions operation is indicated as soon as hydration of the patient is achieved. The Miller-Abbott tube has a therapeutic place in cases where partial obstruction follows a recent laparotomy. Its use should be condemned in mechanical obstruction where prompt surgery is indicated immediately dehydration is overcome.

A carefully taken history and a careful physical examination are essential in the interpretation of acute abdominal pain. Laboratory and x-ray findings are frequently misleading and should be accepted with caution. The consultant should always be given the opportunity of taking a direct history from the patient.

NORMAN S. SKINNER

Relation Between Neuritis and the Clinical Background in Diabetes Mellitus. Bonkalo, A.: *Arch. Int. Med.*, **85**: 944, 1950.

To cast some light on the above problem the author compares a group of diabetic patients suffering from organic neuritis with another group suffering from dia-

betes but not having neuritis. Both groups were selected with care so as to make the findings as useful as possible. Seventy-four cases presented frank neuritic symptoms with organic disease. Loss or disturbance of tendon reflexes was the most outstanding and prevalent evidence of the presence of nerve tissue damage: patellar reflexes, ankle jerk, upper extremity tendon reflexes, in order of frequency. This disturbance of lower extremity reflexes was regarded as the significant objective sign. Also paraesthesia: in both arms and legs. Hyperesthesia: pain, vague or boring in character; muscle tenderness; blunting of cutaneous sensibility; absence of vibratory sense over tibia; cerebellar ataxia (very rare); sluggish pupillary reactions (occasional); trophoneurotic complication, such as Dupuytren's contracture of the palmar fascia. The patients with neuritis showed a higher average blood sugar but nothing significant in the behaviour of their ketone bodies. The duration of the disease, as would be expected, was of importance, the percentage of cases afflicted with neuritic symptoms increasing with the duration of the disease.

P. M. MACDONNELL

Multiple Pregnancies in Patients with Rheumatic or Congenital Heart Disease. Correll, H. L. and Rosenbaum, F. F.: *Am. Heart J.*, 39: 283, 1950.

The majority of previous reports relating to this subject have indicated that parity *per se* has relatively little effect on the ultimate prognosis in women with heart disease. In this study 52 patients with rheumatic heart disease and 1 with congenital heart disease were selected on the basis of having had at least 4 pregnancies: 30 patients had died; 23 were living. The purpose was to determine why certain women with heart disease tolerate pregnancy apparently well, and to observe the late effects of childbearing upon cardiac disorders. From the evidence provided by the autopsied cases and comparison with the living cases, it is indicated that in most instances there was a considerable amount of cardiac disease present, although estimate of heart size in the living cases was not recorded. There was no progressive increase in incidence of congestive heart failure with increasing parity. Rather, it appeared to be the age at which pregnancy occurred and this in turn reflected a greater duration of the rheumatic state underlying the heart disease. The number of recurrent episodes of rheumatic fever from which the patient had suffered had an important prognostic influence. Auricular fibrillation was infrequent in this group, further suggesting that these cases were in a relatively early stage in the natural course of their disease. The life span of these multiparous cardiac patients was considerably greater if they did not develop cardiac failure in any of their pregnancies, but the ultimate effect of pregnancy on cardiac disease could not be evaluated. It was concluded that "the age of the patient, the duration of the rheumatic state, and the number of attacks of rheumatic fever all seem more important factors influencing the course of the pregnancy in the cardiac patient than the actual number of pregnancies she has borne previously". ARNOLD L. JOHNSON

Mumps Meningitis and Orchitis Without Parotitis. Dewar, R. S.: *Lancet*, 157: 256, 1950.

The causal virus of mumps has a special predilection for the tissues of the gonads and the central nervous system, orchitis, meningitis, and meningo-encephalitis being well-known complications. The incidence of orchitis in men with mumps lies between 17 and 33%. Mumps meningitis is generally accepted as a much less common complication, but the reported incidence varies widely, depending upon the criteria accepted for the diagnosis of meningitis. The occurrence of orchitis and meningitis without parotitis has been noted in epidemics. Coe (1945) and Harris and Bethell (1938) have each reported a case, and the author adds a third. The patient was a 33 year old male admitted to hospital as a case of meningitis. Ten days prior to admission he developed pain and

swelling of the right testicle. Five days prior to admission the patient developed severe occipital headache and what he described as severe shooting pain in the spine. The patient was emphatic that he had at no time had pain or swelling in the region of the salivary glands, earache, or difficulty in mastication. Fourteen days before the onset of his orchitis his son, aged 7 years, living in the same house, had developed typical mumps. Lumbar puncture on admission produced transparent cerebrospinal fluid under slightly increased pressure and containing 180 cells per c.mm. No organisms were found in this or subsequent specimens. Recovery was uneventful, the patient being discharged asymptomatic 3 weeks after admission. The difficulties in diagnosing mumps meningitis in the absence of parotitis are obvious, and especially in differentiating the condition from lymphocytic choriomeningitis, poliomyelitis, and encephalitis due to other viruses. In the present case the author feels that the combination of meningitis with orchitis was strongly suggestive of mumps, and that the diagnosis was made practically certain by the patient's statement that he had not previously had mumps, and by his son's typical attack of mumps starting 14 days before the son's first symptoms. The occurrence of cases such as the one described suggests that the classification "benign lymphocytic meningitis" probably includes a proportion of cases due to infection with the virus of mumps. It also demonstrates the unsuitability of epidemic parotitis as a synonym for mumps. J. H. DARRAGH

Quinidine as a Cause of Thrombocytopenic Purpura. Norcross, J. W.: *New England M. J.*, 242: 53, 1950.

A rare type of iodiosyncrasy to quinidine is reported by the author. The patient was a 66 year old housewife admitted to hospital complaining of 3 attacks of spontaneous bruising and bleeding over the previous 7 years. Each attack had been preceded by paroxysmal auricular tachycardia for which quinidine sulphate had been prescribed. The patient had rheumatic fever at 18 years of age. Between 1925 and 1940 the patient had been given quinidine on several occasions for palpitations with no untoward effect. Between 1940 and 1946 the patient took quinidine on 3 occasions with purpura following each dose of quinidine, each attack of purpura becoming progressively worse, culminating in the near-fatal attack for which the patient was admitted, in which there was cerebral purpura, as well as numerous ecchymotic areas distributed over the body, epistaxis, haematuria, and haematemesis. The platelet count was found to be 80,000. The patient was treated with snake venom and several small transfusions, and gradually over the course of 3 days the platelet count rose to 400,000, the petechiae cleared, and she recovered. Three months later the platelet count was found to be 380,000. A test dose of 3 mgm. of quinidine sulphate was followed by nausea, weakness, dull headache, and 32 hours later the platelet count was found to be 33,500. The author emphasizes the necessity of early recognition of the causative factor in drug sensitivities leading to purpura. J. H. DARRAGH

The Effect of 10% and 100% Oxygen Inhalation on Certain Liver-Function Tests. Kaufman, P., Hollo, J., Rosenthal, J., Stone, J., Beck, R. D. and Fink V.: *New England J. Med.*, 242: 90, 1950.

Significant changes in the bromsulphalein excretion test, in the presence of an abnormal dye retention indicating liver disease, are brought about by anoxia and hyperoxia. Inhalation of a mixture of 10% oxygen in nitrogen for 35 minutes caused an increase in an already impaired excretion of five out of seven patients. Inhalation of 100% oxygen for four hours lessened the degree of dye retention in the same number. Other liver function tests done concurrently showed no conclusive changes. The 10% oxygen mixture did not alter the results of the bromsulphalein test in 14 normal controls. It is suggested that the artificial induction of anoxia may have some value in

assisting in the diagnosis of hepatic disease and that hyperoxia may have a worthwhile therapeutic effect.

NORMAN S. SKINNER

Treatment of Acute Gouty Arthritis with Pituitary Adrenocorticotrophic Hormone (ACTH). Margolis, H. M. and Caplan, P. S.: *J. A. M. A.*, **142**: 256, 1950.

The authors report on the striking beneficial results in 3 cases of acute gouty arthritis treated with ACTH. Two of the patients were 59 years of age, and the third was 41 years. The duration of their symptoms varied from 9 to 16 years, during which time they had recurrent attacks of typical gouty arthritis involving more than one joint, with laboratory and radiological findings compatible with the diagnosis. All three had been treated with colchicine, salicylates, and low purine diet, but had shown decreasing response to accepted measures of treatment. The first patient had been invalidated for 7 weeks and had suffered violent pain for four weeks. The second patient had been in pain for five weeks and was completely invalidated for one week, and the third patient had had pain for 6 weeks prior to the administration of ACTH. Two of the patients received single 50 mgm. intramuscular injections of ACTH, with dramatic effect, the first being relieved of his symptoms of gouty arthritis in one hour, and the second in one hour and fifteen minutes. The third patient received 50 mgm. of ACTH intramuscularly and six hours later there was moderate improvement. He was then given an additional 25 mgm. of the drug and 15 hours later there was only slight residual soreness in the right knee and left wrist. The excretion of large quantities of urates as a result of an increase in the renal clearance of uric acid is one of the effects of administration of 11, 17 oxysteroids and ACTH. However, the authors feel that the improvement in gout induced by ACTH is probably not related to increased excretion of uric acid, since the administration of salicylates may induce a similar excretion of uric acid. Unlike the therapeutic problem in rheumatoid arthritis, in which long continued administration of cortisone or ACTH is required, the acute gouty episode in 2 cases reported by the authors was terminated by a single dose of 50 mgm. of ACTH, and in the third case it was necessary to give a single repeat dose of 25 mgm. It has previously been reported that shortly after the cessation of treatment of gouty arthritis with ACTH (generally within 36 hours) a decided rebound of gouty symptoms may develop. The authors believe, as a result of their experience, that by the administration of colchicine or salicylates, or both together, immediately after the discontinuance of treatment with ACTH, the rebound of acute gouty arthritic manifestations may be prevented.

J. H. DARRAGH

The Effect of Nasal and Sinus Surgery upon the Manifestations of Allergy. Weille, F. L.: *New England J. Med.*, **242**: 43, 1950.

The effect of nasal and sinus surgery on the manifestations of allergy always has been and still is a controversial subject. The problem is here considered in the light of experience with 783 previously reported cases of asthma or vasomotor rhinitis or both; 276 surgical frontal-sinus cases, mentioned in relation to frontal-sinus problems in the total group (only ten of these 276 had asthma); 272 surgical cases of vasomotor rhinitis (51 with asthma) and an additional 204 surgical asthma cases.

Operation was found to improve the nasal condition in about 75% of patients with both asthma and vasomotor rhinitis, provided that there was an adequate follow-up period with proper attention to recurrence of polypoid formation. Ten per cent of asthmatics are cured and about 50% improved as a result of nasal surgery. It is at present impossible to select in advance the patient with either vasomotor rhinitis or asthma who will be benefited by surgery. Surgery directed toward improvement of the nasal cavities, mechanically or physiologically, and toward lessening sinusitis in the antrum, ethmoid and sphenoid sinuses, offers less risk

of a poor local result and probably offers as much hope for the improvement of vasomotor rhinitis and asthma as more radical external surgery of the frontal, ethmoid and sphenoid sinuses.

The author expresses the view that a specific allergy virus or nasal virus infection can cause nasal and sinus polyposis, vasomotor rhinitis and intrinsic asthma.

NORMAN S. SKINNER

Obstetrics and Gynaecology

The Association of Certain Ovarian Cells with Endometrial Cancer. Shaw, W. and Dastur, B.: *Brit. M. J.*, **2**: 113, 1949.

Unusual cells have been demonstrated in the mesovarium and ovarian medulla of cases of adenocarcinoma of the endometrium and of endocervical carcinoma. The cells are secretory in type, yet differ morphologically from any ovarian cells known to the authors. They have not been discovered in control cases. They are found only in relatively small numbers and may be extremely difficult to detect. A single section through the ovary is insufficient, as a general rule, to demonstrate them. The cells may possibly be carcinogenic, secreting a hormone which stimulates some of the cells of the endometrium of the body of the uterus and cervical canal to undergo malignant change. It is hoped that a further search for them will be made in other laboratories.

ROSS MITCHELL

Treatment of the Concealed Accidental Haemorrhage of Pregnancy. Crichton, D.: *Brit. M. J.*, **1**: 401, 1950.

The most important aspect of the treatment of concealed accidental haemorrhage is the treatment of shock. Transfusion of incompatible blood and intravenous injection of uncontrolled quantities of blood and other fluids contribute to the mortality of these patients. Routine administration of continuous oxygen, avoidance of surgical treatment capable of causing shock, and care with intravenous therapy will reduce the incidence of anuria. Certain complications, notably post-partum haemorrhage and anuria, should be anticipated, and be promptly treated if they occur. There is no place in treatment for artificial rupture of the membranes in the absence of contractions, plugging of the vagina, version, dilatation of the cervix, application of volsellum to the scalp, and other radical procedures. Artificial rupture of the membranes, even in the presence of contractions, is dangerous without preliminary treatment of shock. Transverse low-segment Cesarean section has a small but definite place in treatment, the indication being the continued absence of contractions and progressive deterioration of the patient's condition after conservative measures have been given a fair trial.

ROSS MITCHELL

Changes in Size of Red Cells During Normal Pregnancy. Merivale, W. H. H. and Richardson, G. O.: *Brit. M. J.*, **1**: 463, 1950.

Serial estimations of haemoglobin, red cell count, mean corpuscular diameter and mean corpuscular volume have been made during pregnancy in 16 healthy women. The mean corpuscular diameter shows a greater range of variation than in healthy non-pregnant women. There is evidence of abnormal haemopoiesis, indicating that a woman's diet is not completely adequate to supply the needs of both her own and the fetal red cells.

ROSS MITCHELL

Gelfoam, Vaginal Smear and Biopsy in the Diagnosis of Uterine Carcinoma. Rich, J., Angrist, A. A. and Carpenter, F.: *Am. J. Obst. & Gynec.*, **59**: 1029, 1950.

The results of a comparison of the formal biopsy and exfoliative cytological studies, by means of the Papanicolaou smear technique and the Gladstone gelfoam procedure, are presented in 68 cases of suspected uterine malignancy. The Papanicolaou smear technique and the gelfoam biopsy method are found to be worthy adjuncts in the diagnosis of carcinoma of the

cervix. The gelfoam biopsy procedure is superior from the standpoint of time saving and can readily approach the accuracy of the vaginal smear. A procedure is recommended which permits the vaginal smear and the gelfoam biopsy to be combined in a single study.

ROSS MITCHELL

The Cervix in Pregnancy. Galloway, C. E.: *Am. J. Obst. & Gynec.*, 59: 999, 1950.

Visualization of the cervix should be a part of our prenatal care. Bloody show in pregnancy calls for inspection of the cervix in many cases and in the past this procedure has not been used enough. Our knowledge of the changes occurring in the cervix during pregnancy is very limited and less is known about the gross pathological changes than the microscopic. There is apparently some relationship between parturition and cervical carcinoma. We must, therefore, acquire the knowledge to explain the relationship, and repeated inspection of the cervix together with biopsy when indicated should promote this learning.

ROSS MITCHELL

Anæsthesia for Cæsarean Operation. Davenport, H. T. and Prime, F. J.: *Brit. M. J.*, 1: 1347, 1950.

The advantages of local analgesia and curare with light general anaesthesia (intravenous thialbarbitone, cyclopropane and oxygen) for Cæsarean section are discussed. A statistical analysis of the neonatal mortality occurring after Cæsarean section performed under ordinary general anaesthesia, curare sequence and local analgesia supports the view that local analgesia is to be preferred to ordinary general anaesthesia. There is no evidence to indicate clearly the position of the curare sequence in the three methods considered.

ROSS MITCHELL

Vitamin B₁₂ and Folic Acid in Megaloblastic Anæmia of Pregnancy and the Puerperium. Ungley, C. C. and Thompson, R. B.: *Brit. M. J.*, 1: 919, 1950.

The injection of vitamin B₁₂ in doses of 65 to 80 mgm. was ineffective in six patients with megaloblastic anæmia associated with pregnancy or the puerperium, all of whom subsequently responded to folic acid, usually 2.5 mgm. daily. The etiological significance of these findings is discussed.

ROSS MITCHELL

The Cause and Management of Failed Forceps Cases. Freeth, H. D.: *Brit. M. J.*, 2: 18, 1950.

The records of 100 cases of failed forceps have been investigated. Primigravidae comprise almost ¾ of the patients. Occipito-posterior positions and deep transverse arrest of the head account for over 50% of the cases; the cervix was not fully dilated in 20%. Since the introduction of chemotherapy the maternal mortality has been materially lowered, as has the fetal mortality, but to a less extent. Internal version has little or no place in the treatment of failed forceps delivery. Brim disproportion should be treated by lower-segment Cæsarean section; the results from this operation were uniformly good in spite of the previous manipulations.

ROSS MITCHELL

Placental Metastases in Malignant Disease Complicated by Pregnancy. Bender, S.: *Brit. M. J.*, 1: 980, 1950.

The eighth and ninth cases of metastasis of a maternal tumour to the products of gestation are described. Secondary deposits were found in the placenta in both cases, but the umbilical cords and the babies were not affected. Both patients died, one eight hours and the other 10 weeks after delivery. If metastases are present in the placenta in the absence of demonstrable secondaries elsewhere the prognosis for the mother is poor. These two cases were encountered within a space of seven months, and therefore a plea is made for the routine histological examination of the products of gestation in all cases of the maternal disease complicated by pregnancy.

ROSS MITCHELL

Surgery

Nipple Discharge: Its Clinical and Pathologic Significance. Donnelly, B. A.: *Ann. Surg.*, 131: 342, 1950.

Out of 2,269 cases of mammary lesions there were 219 patients whose chief complaint was discharge from the nipple. Of these 219 cases, 36 did not have a palpable mass when examined, but 30 had microscopic evidence of hyperplasia, 5 had malignant lesions; and 6 were judged to have precancerous change. Discharge may precede a palpable lump in the breast. It is stated that if a patient has a discharge but no lump, there is a 50% chance of having or developing cancer in the breast whether it be sanguineous or serous. Therefore simple mastectomy is recommended. If there is a palpable tumour, it should be removed and further treatment would depend on the histological findings. If diffuse nodularity accompanies the discharge and a section reveals benign papilloma, simple mastectomy is recommended, since the author describes cases in which a malignant papilloma was found in another part of the breast in which a benign papilloma had been excised.

BURNS PLEWES

The Incidence of Swollen Arms After Radical Mastectomy and Suggestions for Prevention. Daland, E. M.: *New England J. Med.*, 242: 497, 1950.

Subsequent examination of 90 patients after radical mastectomy showed that in five patients the upper arm, and in six the lower arm, had a smaller circumference on the operation side as compared with the arm on the other side. This was considered due to atrophy but there was no evident disturbance of function. Slight swelling (increased circumference of 1 to 2.5 cm.) was found in 31% of upper arms and 27% of forearms on the operated side without disability. Moderate swelling (2.5 to 4.5 cm.) occurred in 17% of upper and 10% of lower arms and in only one of these was there any limitation of function. Severe swelling was present in 5.5% of upper arms and 6.6% of lower arms and disability was usually severe.

The low percentage of patients in this series exhibiting any significant degree of swelling of the arm following mastectomy is a marked improvement over that which is generally reported and this improvement is considered to be the result of technical factors. The Greenough modification of the Rodman incision was used in all cases (a transverse axillary incision with an arrow-head-shaped incision about the breast, removal of a segment of skin between the axilla and breast with completion of axillary dissection before breast removal). This leaves no scar on the arm. Drainage is important to prevent haematoma and early use of the arm is the rule.

X-ray therapy is an important factor in causing post-mastectomy swelling of the arm and is only employed by the author when recurrence is evident.

NORMAN S. SKINNER

The Control of Blood Transfusion Hazards. McClure, R. D., Hartman, F. W. and Mangun, G. H.: *Ann. Surg.*, 131: 628, 1950.

It is estimated that in the average general hospital there is an average of six transfusions per bed per year. With cross-matching and attention to the Rh factor, reactions are few, but one to five haemolytic reactions per 1,000 transfusions still occur. Intravascular haemolysis causes chills, pains in the chest and legs, respiratory distress and shock. The patient usually survives the initial shock but lower nephron nephrosis may prove fatal.

Other dangers due to giving blood after glucose, pyrogens, transmission of syphilis and malaria, and homologous serum jaundice are discussed. Nitrogen mustard may be added to blood or plasma as a chemical viricide. Precautions to be observed are outlined. HN₂ is recommended for use in the sterilization of pooled plasma. It is recommended also that the whole

procedure of transfusion: bleeding, sterilization, grouping, cross agglutination, storage and administration, be performed by one transfusion team. BURNS PLEWES

Laceration of Parotid Duct: Further Experiences.
Sparkman, R. S.: *Ann. Surg.*, **131**: 743, 1950.

Of 12 cases in which primary repair of the severed parotid duct was attempted, 8 were successful as proved by seeing saliva flow from the ostium and by sialography. Injury to the duct is suspected in lacerations of the face which cross a line from the lower border of the external auditory meatus and a point midway between the ala and the upper border of the lip. Anastomoses were accomplished over a ureteral catheter with 6-0 silk on a cutting needle. The catheter is withdrawn and a diet given to stimulate the flow of saliva. A silver wire probe may be found to pass more readily than a catheter through the distal end of the duct. Associated injury of gland substance may be avoided by tight closure of the parotid capsule and avoidance of infection. If the ends of the duct are destroyed, ragged or bevelled ligation may be performed with safety. The author agrees with Morestin that spontaneous occlusion or ligation of the parotid duct is not serious and that repeated operations to deal with a parotid fistula should be condemned because of the danger of facial palsy.

BURNS PLEWES

Pathology

Hypertensive Cardiovascular Disease: An Experimental Study of Tissue Changes in Bilaterally Nephrectomized Dogs. Muirhead, E. E., Vanatta, J. and Grollman, A.: *Arch. Path.*, **48**: 234, 1949.

The authors have succeeded in maintaining the lives of bilaterally nephrectomized dogs for as long as 19½ days by means of an electrolyte free diet and the application of the artificial kidney. Such dogs were found to develop a marked degree of hypertension and to show widespread lesions of blood vessels, smooth muscle and to a lesser extent of skeletal muscle. The vascular lesions were similar to those commonly ascribed to malignant hypertension while those in muscle were of a degenerative and necrotic type and were identical with those occasionally seen in human subjects dying of hypertensive cardiovascular disease. It was concluded that the various lesions observed acted to limit the survival of the experimental animals. It is pointed out that the hypertension that developed in the bilaterally nephrectomized dogs could not have been due to the elaboration of renal pressor substances. It was concluded on the other hand that the kidney normally exerts a function concerned with the maintenance of the normotensive state.

G. C. McMILLAN

The Human Aorta: Influence of Obesity on the Development of Arteriosclerosis in the Human Aorta.
Faber, M. and Lund, F.: *Arch. Path.*, **48**: 351, 1949.

This paper reports the findings in an investigation of the rôle of obesity in the development of arteriosclerosis and atherosclerosis of the aorta. The dry weight of the aorta, its cholesterol content and its calcium content were determined in 408 autopsy specimens. The results were then related to body weight and to hypertension. It was found that hypertension gave an increase in these factors above what should be expected according to age. On the other hand, obesity had no effect on any of the factors studied when the presence of hypertension was taken into account.

G. C. McMILLAN

Influence of Dicoumarol on Streptococcal infection in Rabbits. Thuerer, G. R. and Angevine, D. M.: *Arch. Path.*, **48**: 274, 1949.

In an effort to clarify further the rôle of fibrin in the localization of bacterial infection the authors studied the course of experimental infections in normal and in dicoumarolized rabbits. Infections were initiated by

intracutaneous injection of a standardized inoculum of haemolytic streptococci. It was observed that the infections spread more extensively in dicoumarolized animals with increased prothrombin times than in normal rabbits. In those animals that did not respond to dicoumarol but maintained a normal prothrombin time, the extent of the infection was similar to that in the controls. Histologic observations indicated that a lack of fibrin in the tissues of the treated animals was probably a factor in the spread of the infection.

G. C. McMILLAN

Degenerative Renal Lesions Induced by Prolonged Choline Deficiency. Lalich, J. J., Kline, B. E. and Rusch, H. P.: *Arch. Path.*, **48**: 583, 1950.

The authors report the effects of chronic choline deficiency on the kidneys of rats. The animals were maintained on a choline deficient diet for from 6 to 19 months. Marked renal changes were observed in the choline deficient group consisting principally of tubular casts in the lower nephron, dilatation of proximal convoluted tubules and glomerular atrophy and fibrosis, as well as interstitial fibrosis and focal lymphocytic infiltration. Grossly the kidney surface was slightly granular. Both the deficient and the control group showed slight tubular calcification and terminal pulmonary infections. Evidence of recent or old renal hemorrhage was minimal or absent. In addition to the renal changes the choline deficient rats developed fatty livers and hepatic fibrosis. Neoplasms did not occur. The authors consider the renal changes as degenerative rather than inflammatory in origin. They do not believe that their observations have any direct bearing on the pathology of renal disease in man.

G. F. MEISSNER

Glomerulonephrosis: A Morphologic Manifestation of Renal Cortical Ischaemia in Toxic Oliguria and Lower Nephron Nephrosis. French, A. J.: *Arch. Path.*, **49**: 43, 1950.

In order to prove his contention that renal tubular changes in lower nephron nephrosis are not sufficient to explain the occurrence of oliguria and anuria but that glomerular lesions such as seen in eclampsia or in "Bell's glomerulonephrosis" should be present, the author examined the kidneys from 20 patients, 21 to 71 years of age. These presumably had clinical evidence of lower nephron nephrosis as well as severe underlying diseases of a diverse nature. No cases of eclampsia were included. The author found the usual changes consistent with lower nephron nephrosis in addition to slight glomerular lesions consisting mainly of renal ischaemia, slight thickening of capillary walls and capsular and tubular casts, which stained grey with the haematoxylin eosin stain and presumably were protein. From these findings the author concludes that glomerulonephrosis was present in these cases to account for anuria and he attributes the protein casts to a state of hyperglobulinosis. In the reviewer's opinion it is difficult to accept these minimal glomerular changes as significant, since the above selected cases suffered from a variety of conditions other than lower nephron nephrosis and particularly in the absence of any kind of control material.

G. F. MEISSNER

Psychiatry

Psychogenic Factors in Dermatitis and Their Treatment by Group Therapy. Klein, H. S.: *Brit. J. M. Psychol.*, **22**: 32, 1949.

This is a thorough article on the subject of emotional aspects of skin disorders and their effective treatment by combined individual and group psychotherapy. It might be criticized for its lack of definition of "dermatitis" and hence its lack of clarity as to what is meant of actual skin lesions in the 17 cases which are reported in detail. But several facts are striking in addition to a concise survey of previous literature on psychiatric aspects of skin disorders. All of the patients had severe emotional problems. Five of them had been re-

ferred as psychiatric problems without dermatitis being a leading symptom. Seven were referred by dermatologists because of failure to respond to the usual methods of treatment although most of these had been treated for years by dermatologists without any suspicion that psychological factors might be important. Five had been attending their own doctors for dermatological treatment without being thought to suffer from any psychiatric condition. Thirteen of these patients were treated by group psychotherapy with individual sessions as indicated, the amount of time with each patient varying from 10 to 80 hours. Of the four untreated, one developed a psychosis, one refused treatment, one was unable to attend, and one recovered with a simple environmental manipulation. Of those treated, only one showed no improvement; the others became free from skin disease at least for a time: four remaining completely well, one relapsing with neurotic symptoms, and five having persisting neurotic symptoms, three of these being able to work and two of them relapsing. Two patients who were symptom-free at the end of treatment could not be followed up later.

The type of emotional problems found in these individuals revolved around compulsive personality characteristics with additional problems concerned with exhibitionistic-voyeuristic conflicts. The precipitation of the skin disorder was usually associated with a conflict with an authoritarian figure unconsciously representing a parent who had a traumatic effect on the patient. These features did not usually become evident until treatment was in progress, and they certainly could not be interpreted to a patient in superficial psychotherapy.

W. DONALD ROSS

The Psychosomatic Implications of the Primary Unit: Mother-Child. Benedek, T.: *Am. J. Orthopsychiat.*, 19: 642, 1949.

This is a discussion of the psychological and hormonal changes which take place during the symbiosis of mother and child beginning with pregnancy and continuing into the puerperium and nurturing period. With the separation of birth, interactions continue of paramount significance to the mother as well as of fundamental importance in the emotional and physiological development of the infant, including predisposition in the infant to the later development of psychosomatic disorders with any regression induced by stress.

W. DONALD ROSS

Treatment of Psychosomatic Disorders by the General Physician. Crédé, R. H., Rosenbaum, M. and Lederer, H. D.: *J. A. M. A.*, 143: 617, 1950.

This is a description of the teaching program at the Cincinnati General Hospital for the instruction of general physicians in their handling of the emotional problems of their patients. The psychiatry teaching of undergraduate medical students is centred around the emotional problems encountered commonly in general practice. Evening seminars are also given to practising physicians including ones on the visiting staff of the hospital. The residents on the medical service are in contact with the effects of this indoctrination, and they have an opportunity to acquire practical experience under psychiatric supervision in the "Psychosomatic Clinic", a division of the general Medical Clinic which is held on two afternoons a week. The residents carry patients for regular half hour to one hour interviews. The goals of therapy in the Clinic have been: (1) symptomatic relief; (2) improved total functional capacity of the patient, and (3) prevention of recurrences, exacerbations or complications of the patient's illness. The means of achieving these goals is the supportive rôle of the physician who is interested to listen to the patient's emotional problems and to continue to see the same patient with the support which he gets in turn from supervisory conferences with a psychiatric consultant. He learns much of psychodynamics by discussion with the psychiatrist. He uses this for his own knowledge

of how to conduct himself with the patient, when to hospitalize, when to call on other resources such as social service, and when to request psychiatric consultation, although he makes little use of this psychodynamic information in direct interpretation to the patient. Illustrative case histories are given of a patient with peptic ulcer and two with hypertension.

W. DONALD ROSS

Industrial Medicine

Mercury Poisoning from Fingerprint Photography: an Occupational Hazard of Policemen. Agate, J. N. and Buckell, M.: *Lancet*, 2: 451, 1949.

This article presents a new form of a long-established industrial disease—an occupational hazard of policemen, resulting from the use of grey powder (mercury-with-chalk) in fingerprint work. The standard method of developing latent fingerprints with this powder, is outlined, together with an account of mercury as an occupational hazard. Following this the author describes the investigation carried out in the Lancashire Constabulary, a force which sets particular value on fingerprint work and which since 1936 has used grey powder. A special body of 32 men are engaged regularly on this work. In order to ascertain the possible mercurialism arising from this occupation, the officer in charge of this Constabulary and 31 of his men volunteered for examination. During the fortnight preceding the examination each man kept an accurate record of his exposure; the degree of his exposure for a longer period was estimated from the record of crimes investigated. Mercury excretions were determined by analyzing 24 hour specimens of urine.

The findings are given, including one case history. A table shows the estimated exposure in hours during the preceding 2 weeks and during the preceding year, the urinary mercury excretion, and, the evidences of mercurialism. Of the 32 men engaged regularly on this work, 7 showed evidence of chronic mercurialism. The affected men had all had protracted exposure to grey powder—2 for 13 years, 1 for 12 years, 1 for 7, 2 for 5, and 1 for 4 years. They had been exposed to risk at the average rate of 250 hours or more per year. In the author's opinion exposures in excess of 250 hours per year constitute a real risk. As in previous investigations of mercury poisoning it was found that in individual cases the amount of mercury excreted in the urine is not a reliable guide either to the degree of exposure or to the presence of overt mercurialism. The average excretion of the group however was abnormally high.

Brief reference is made to prevention. Masks and gloves are not a practical solution to the problem. A good substitute for the grey powder is indicated. The officer in charge of the Lancashire Constabulary has evolved one for their use and now the use of grey powder is prohibited in their area. It is suggested that other police forces follow this example. From time to time a great many men engaged on fingerprint duty must be at risk to a lesser degree, and the possibility of unusual individual susceptibility, so often met with in toxicology, must not be overlooked.

MARGARET H. WILTON

Health Problems in Industrialized Agriculture. Axelrod, S. J.: *Am. J. Pub. Health*, 39: 1172, 1949.

That industrial hygienists should extend the application of preventive medical techniques to workers in the agricultural industry is suggested in this article. Industrialized agriculture is no longer a "way of life" but a part of the industry of the nation. The health problems of its workers must be viewed against the background of the far-reaching social and economic changes that have taken place. The author outlines the factors that led to the industrialization of agriculture in the United States, the extent of its development and the problem of the migrating farm worker in those areas where seasonal farm labour needs are so high that sufficient workers cannot be recruited locally. Owing to

poverty and unsanitary and difficult surroundings, these migrants carry a tremendous burden of disease and disability. A consideration of workmen's compensation in the United States shows the unfavourable position of the farm worker. Only in five states is the farm worker specifically covered by legislation and even in these states there are numerous limitations and escape clauses. As with workers in other industries, the farm worker suffers from industrial accidents, toxic exposures and occupational dermatoses. A brief review is given of the various hazards encountered.

Attention is drawn to the fact that occupational injuries and diseases among workers in industrialized agriculture by no means constitute the bulk of their health problems. Information from the United States Department of Agriculture's Office of Labour reveals that there is a similar distribution of occupational and non-occupational disease to that found among other industrial workers. Their findings over a four-year period 1943-47, showed that upper respiratory infections were frequent, as were also digestive disturbances. In areas where industrialized agriculture has reached its highest stage of development, x-ray evidence of tuberculosis is found about twice as frequently as among the general population.

MARGARET H. WILTON

Executive Health Examinations—Limitations and Advantages. Shillito, F. H.: *Transactions of Fourteenth Annual Meeting, Industrial Hygiene Foundation of America, Inc.*, p. 47, November 17, 1949.

In these days of keen competition, achievement of maximum efficiency in plant production is essential. To this end it behoves industry to consider most seriously all conceivable ways and means of improving the physical, mental and emotional health of the executives. In this article the author considers the factor of individual health as it is related to capacity for work. For the past twenty-five years industrial health examinations have been in vogue. Their value in regard to longevity is yet to be finally established. No valid scientific conclusions can be drawn until mortality figures are available so that the average age of death of "examined" versus "not examined" groups can be compared.

That they contribute materially to day by day health through attention to deviations from the norm in respect to weight, blood-pressure, health habits, and emotional maladjustments, is recognized. Of equal importance is the fact that a contact is established with the patient so that he promptly consults the medical department for every unusual symptom. Several case histories are cited which show the value of this personalized service and illustrate the way in which health catastrophes have been observed by the industrial physician.

There are many different varieties of health examinations being carried out in industry today. They vary with the objectives. The author cites the following objectives for the executive health examination: (1) Establishment of a friendly contact and rapport between the industrial physician and employee executive. (2) Discernment of the commonest correctible deviations from the norm such as condition of teeth, skin, weight, acuity of eyes and ears, blood pressure and errors of personal hygiene. (3) Detection of chronic debilitating conditions such as chronic infection of lungs, prostatitis or pyelonephrosis, anaemia, cardiac disorders or gastro-intestinal pathology.

He recommends that the original health examination be a thorough medical appraisal plus history and laboratory studies. The determination of base-line laboratory and x-ray values will serve for future reference. Subsequent examinations at yearly intervals should be restricted to consultation and health counseling. Significant symptoms whenever presented should be promptly investigated by every available medical aid, including attention by specialists and laboratory and x-ray studies. Reference is also made to the importance of enlisting the enthusiasm of executives to submit to the examination. It must be understood by everyone that the examinations are entirely voluntary and absolutely confidential.

MARGARET H. WILTON

Carbon Tetrachloride Poisoning. Watts, R. W. E.: *Lancet*, 1: 66, 1950.

As a hepatotoxic agent, carbon tetrachloride is well-known. Other toxic actions are less widely appreciated. Poisoning from this substance may occur by direct contact, by inhalation or by ingestion. In this article the author presents a case of poisoning by ingestion in which damage to the heart and kidneys dominated the picture. The case is that of a 59 year old man who drank about 2 oz. of carbon tetrachloride. After recovering from the initial narcotic effects he returned to work and continued working for ten days. He complained often of general malaise, headache, lethargy and mental confusion—symptoms which became progressively more severe. Twelve days after drinking the poison he was admitted to hospital. It was noted on admission that the symptoms and physical signs were predominantly those of heart-failure. This suggests to the author that the carbon tetrachloride had precipitated an attack of congestive heart-failure in a man who was already arteriosclerotic and mildly hypertensive. As the patient had not come under medical supervision until ten days had elapsed, it could not be stated with certainty that there had been no damage to the liver. Shortly after admission signs of uræmia became apparent and it was observed that while renal function was deteriorating, the signs of heart-failure were subsiding. Involvement of each organ followed its own course. Reference is given to cases previously reported in the literature and comparison made of the clinical manifestations which arose.

MARGARET H. WILTON

Vacation Policy Trends. Sawyer, W. A.: *Indust. Med.*, 19: 289, 1950.

This paper is presented in an attempt to clarify the present situation with regard to industrial vacations, and to lead to more adequate planning in the future. It is the result of a study of the subject from the health viewpoint which the author, as Medical Director of the Eastman Kodak Co., Rochester, N.Y., conducted at the instigation of that company. He first examines the practices of the past and of the present and indicates the direction which present trends and thinking are taking. Literature on the subject is scanty especially from the medical viewpoint. An appraisal of vacations by the American Management Association in 1926 showed that the thinking of that time favoured the granting of vacations to executives and office employees, but the desirability of them for factory workers had not been generally accepted.

Two recent surveys by the Metropolitan Life Insurance Company together with one by the National Industrial Conference Board showed developments up to 1946 with a decided trend toward liberalization of vacation privileges accelerated by World War II and continued thereafter. Identical vacations for all types of employees with the same length of service was commonly accepted. Reference was made to special vacation provisions for executives. It was noted in the report of the National Industrial Conference Board that while less than 3% of the United States companies covered in that study, contained such plans, they were the practice in almost 40% of the participating Canadian companies. Reference was made in this also to the recent trend toward legislation in Canada; in United States there has been practically no legislation governing vacations except for government employees. The author then gives his appraisal of the subject from a health viewpoint, basing his opinions on 91 replies from a questionnaire he sent to other company medical directors and on information gained from correspondence with several authorities on employee health.

The author's conclusions are as follows: (1) On routine jobs with a five-day week, the present trend of two weeks' paid vacation, with an additional week for length of service, is a good advance over previous years and is a step in the right direction. We have no proof that two weeks is enough. (2) For older em-

ployees, executives and department heads, especially those carrying unusual responsibility, longer vacations should be provided. Three to four weeks, sometimes six, seem indicated. Where possible split vacations are beneficial, *i.e.*, two vacations approximately six months apart, provided one is at least for two weeks. (3) Where periodic medical examinations are made, or for other medical reasons, vacations should be lengthened on the physician's recommendations. (4) If some such program of vacation as this is followed, and an effort is made to advise regarding the value of relaxation through hobbies, and proper exercise and recreation throughout the year, untimely breakdowns should be prevented.

MARGARET H. WILTON

The Diabetic in Industry. Fowler, A. F.: *Indust. Health Rev.*, 2: 30, 1950.

That the diabetic is employable and should be given suitable employment is indicated by this article which is the report of an address presented before the Industrial Medical Conference at Quebec City, September 29, 1949. The author presents the problem of employment as it affects both the individual and the community. He considers (1) the individual seeking employment, (2) the individual who develops diabetes while employed and (3) the life expectancy of diabetics.

The problem of the diabetic seeking employment involves several factors. Some companies may refuse to accept him. It should be recognized that in the right job he is as good or better than the average employee. A recent survey by the Bell Telephone Company of Pennsylvania reports that the time lost by their diabetic employees was no greater than that of the average employee. That the employment be suitable is essential. The diabetic who in addition to his diet requires insulin presents a greater problem than the one who can be controlled on diet alone. These individuals should not be employed in occupations where their conduct might be a hazard to themselves or affect the welfare of other employees or result in damage to the machine or equipment with which they are working. Persons who develop diabetes while employed constitute a larger problem and one which companies must face in order to protect their own interests. There are many factors to be considered when shifting a man from one position to another. The author also draws attention to the change in the life expectancy for the diabetic. As a group they have increased their average life expectancy; it is now three-quarters of the expectancy of life for the population as a whole and it is steadily increasing. The average diabetic is expected to live through the generally accepted period of employment. As a result consideration must now be given to the question of pension schemes.

MARGARET H. WILTON

Dr. Frank Woodside Boyd, aged 47, died on July 10 in Winnipeg General Hospital. Born in Portage la Prairie, Dr. Boyd graduated from the University of Manitoba in 1927 and had practised in Winnipeg since. Dr. Boyd was active in the Riverview Community Club and Manitoba Medical Society. He is survived by his widow, a son and a daughter.

Dr. Hubert Arthur Wood Brown, aged 68, died suddenly on July 7, in Parksville, B.C., from a heart attack while treating an infant patient. Dr. Brown was born at Toronto 68 years ago. He studied medicine in the East, and served as a captain during the Great War, being one of the few to return in the famous 29th Battalion. Prior to coming to Parksville five years ago, he had practised at Fort St. John for 15 years. He was an expert rifle shot and an ardent hunter. While in the North Country he was a member of the American Rifle Association. He is survived by his widow, two sons and three daughters.

Dr. M. Ellen Douglass died at her home in Winnipeg on July 11. Born in Stanley, N.B., she was educated at Edgehill Anglican Church School, Windsor, N.S., and at the University of New Brunswick. Her course in Medicine was taken at the University of Toronto and after graduation there she studied in Baltimore, New York and London. She started practice in Saint John, N.B., then came to Winnipeg in 1909 where she practised continuously save for the war years. In the first world war she became an officer in the Royal Army Medical Corps and served overseas with the Women's Army Auxiliary Corps. In addition to an extensive medical practice she took a leading part in women's organizations. She was a president of the Canadian Federation of Professional and Business Women's Clubs and represented that body at an international meeting held in Budapest in 1938. She was a president of the Winnipeg Women's Canadian Club, and in June, 1950, was made a life member of the University Women's Club. In 1946 she was elected Honorary President of the Federation of Medical Women and in 1948 while serving as provincial commissioner of the St. John's Ambulance Brigade she was given the title of Commander Sister of the Order.

An able public speaker, she taught by precept and example the values of cheerfulness and public service.

Dr. Leslie C. Fallis, aged 63, of Toronto, died of a heart attack at nearby Port Ryerse on July 3. Dr. Fallis, a graduate of the University of Toronto Medical School in 1915, was superintendent of Victoria hospital from 1930 until October, 1934, when he resigned to join the Ontario department of health staff at Toronto. He was chosen honorary president of the Ontario Hospital association in 1941.

Major Harold Gislason, aged 37, died in Northwest Command Hospital, Edmonton, June 15. Maj. Gislason was a former medical officer of the Westminster Regiment.

Dr. Janet Hall died suddenly at Woodstock, Ont., on June 25. She had retired from active practice four years ago. Dr. Hall was born in Blenheim township and graduated from Toronto University School of Medicine in 1899. She took postgraduate courses in England and Europe, and returned to Woodstock in 1900, to set up her practice in partnership with the late Dr. W. T. Parke, until he died in 1924. Dr. Hall then carried on alone until she retired four years ago, at which time the practice was taken over by her nephew, Dr. Gordon Hall, formerly of Toronto. She is survived by one brother.

Dr. Goldwin William Howland, internationally noted neurologist, died in Toronto on July 11. He celebrated his 75th birthday two weeks ago. Dr. Howland was an early advocate of occupational therapy and served for some years as president of the Canadian Association of Occupational Therapy. He graduated in arts from the University of Toronto in 1897 and three years later took the degree of bachelor of medicine. He did postgraduate,

OBITUARIES

Dr. Robert King Anderson, aged 90, died on July 3 at the Hamilton General Hospital. Dr. Anderson was a general practitioner in Milton, Ont. for many years and served as county surgeon from 1896 to 1918. He was born in Trafalgar Township, of Irish parentage, and attended Streetsville High School. He was a graduate in medicine from the University of Toronto and received his degree of L.M. from Edinburgh. He was a former mayor of Milton. He was first elected to the House of Commons in 1917 and re-elected in 1921, 1925, 1926 and 1930. He had been retired for some years. He was formerly paymaster of the 20th Halton Rifles. He leaves one daughter, Marjorie.

Dr. Harold A. Bowie died in Ottawa on June 8. He attended Queen's University, Kingston, graduating in medicine. About twenty-five years ago Dr. Bowie was appointed to the medical staff of the Dominion Pensions Board and took up residence in Ottawa. He is survived by his widow and two daughters.

work in London and Berlin and was a member of the Royal College of Physicians and Royal College of Surgeons. He served as registrar and clinical assistant at Netley Hospital, Queen's Square, London, during 1902-03, and was active in the same capacity at the Toronto General Hospital in 1906-08. Dr. Howland was former chief neurologist at the Toronto General Hospital. From 1922 to 1945 he was assistant professor in medicine on the staff of the University of Toronto. During the First World War, he was a major in the Royal Army Medical Corps. In 1932 he was made a Fellow of the Royal College of Physicians, London, Eng. Dr. Howland was an honorary life member of the American Occupational Therapy Association; a member of the American Neurologists Association and vice-president of the neurologists section of the British Medical Association Centenary, 1932. He was a member of Delta Upsilon and Phi Chi fraternities and also a member of Grace Church-on-the-Hill (Anglican). He leaves his widow, a daughter and a son.

Dr. Alexander Cochrane Lang, aged 30, died in Vancouver on May 24, after a three month illness. Born in Victoria, Dr. Lang graduated from the University of B.C. in 1940 with a B.A. degree. He took his doctor's degree at McGill University three years after leaving U.B.C. During the Second World War he was a captain with the Royal Canadian Medical Corps. He served in Newfoundland and volunteered for service in the Pacific. After the war he did postgraduate work at the Children's Memorial Hospital in Montreal and Johns Hopkins Hospital at Baltimore. In 1949 he returned to Vancouver and practised with Dr. R. P. Kinsman. He leaves his widow and a baby daughter.

**John George MacDougall, M.D.C.M., F.A.C.S.,
F.R.C.S.[C.]**

AN APPRECIATION

In the early morning of June 21, John George MacDougall of Halifax passed to his reward. It was a peaceful, undramatic departure, just the sort he wished and hoped to have. The infirmities of eighty-one years had shown their effect, not painfully but inconveniently, and it was clear to all near him that his strength was failing. For all that he was his quick, genial self to the end, taking life as it came with a philosophy that held no trace of bitterness.

"John George", as we all knew him, was born at Blue Mountain in the Highlands of Pictou County, Nova Scotia. The Blue Mountain community was one of staunch Presbyterian sentiments, and its children were launched on the sea of life well laden with oatmeal porridge and the Shorter Catechism. It was a community of strong men physically, and each youngster grew up with the love of physical competitive prowess. Into this atmosphere came John George on March 3, 1869. In it he grew and thrived. Though never a large man physically like some of his folk, he was in his younger days a powerful man, and possessed of such quickness and agility that his prowess was well recognized both in school and college. That same strength and stamina carried him through serious illness and the tremendous physical demands of fifty years of practice as a surgeon. Between his years in high school at New Glasgow and his medical education at McGill he taught school, which gave him confidence in his ability to teach and a clarity of expression which were to stand him in such good stead in later years. At McGill he won the Holmes Gold Medal, the prizes for the shotput and the hammer throw, and in the succeeding years at the Royal Victoria Hospital his greatest prize, a young and beautiful nurse, his wife for forty-seven years.

Then began his life, first as a general practitioner and later as a surgeon. By every gift and inclination he was prepared for it, and how well he used them the records of his career fully tell. It is, not my purpose to enlarge upon them but to show as best I may how in their employment he appealed to his friends as a surgeon, as a teacher, and as a man.

As a surgeon he wrought mightily and well. In many fields he was a pioneer in Nova Scotia and the amount and variety of his experiences were amazing. At a time when operative treatment of carcinoma of the larynx by total excision was a rare curiosity, he was able to exhibit six patients successfully treated, at a clinical meeting. When thyroidectomy for exophthalmic goitre was a fearful venture attempted by few, he published an account of 100 cases with an analysis of results. When such a procedure was almost unknown he removed a traumatic embolus from the femoral artery, with a perfect result. It was his considered opinion and invariable practice that the preparation of the patient, mentally and physically, was of the highest importance, and when time permitted, this was carried out with the greatest thoroughness. No step was neglected to establish a complete diagnosis, and in spite of a clinical sense of transcendent quality, there were no "short cuts" taken. Technically he was manually dexterous but never hurried. His work was careful and thorough. Of outstanding note was his resourcefulness. Regardless of the emergent situation that might arise he had the technical answer and the ability to capitalize it for the benefit of his patient. The skill of the preoperative care was duplicated in the postoperative period. His entire efforts were to assist nature, not to replace it or combat its curative efforts.

No group will mourn his passing or recall him with such affectionate admiration as his former students. They first saw in him a master of their art. To a degree he was fully equipped: a skilled physician, a urologist of great ability, a gynaecologist, and a surgeon. No matter the hour of retirement at the end of the day, there was a bedside volume from which at least one lesson in his field of interest must be read before slumber came. So a lecture by MacDougall was never skipped, a clinic was crowded by those required to attend and as many more as could, while ward walks were literally processions of triumph. His lectures could be quoted by his students verbatim without effort so firm a hold did his graphic words secure on their memory. But the unconscious absorption of more subtle techniques was ultimately realized by his pupils. To see faces light upon his approach, his gentleness, adroit examination, and skilful questioning, drove home to them the fact that these things were eminently worthwhile and bespoke success in treatment.

Finally we come to John George MacDougall, the man. His humour was quick and a puckish grin or hearty spontaneous laughter in which small steel-blue eyes twinkled with enjoyment gave outward expression to his feelings. Though his indignation could be strong it was never beyond his control, and never aroused without good reason. He was instinctively kind and his intense desire to be helpful inspired in his patients a feeling that he existed for them alone and inspired a degree of confidence which was supported and enhanced by his professional delicacy and technical skill. Unconsciously he adjusted himself to the understanding of the rich and the poor, the cultured and the ignorant, and gained their complete co-operation in solving the problem of the moment. Most of us will remember him best at the bedside of the aged and poor in whom the light was burning low, and ahead was darkness and gloom. To see old, wrinkled faces light up and new animation brighten weary eyes at his coming was an experience never to be forgotten.

John George was a good man. He was conscious of his personal charm and used it not for his selfish ends but to promote well-being in others. It was not superficial, it was instinctive. It came from the power within, an awareness that he was doing his Master's work. He rarely spoke of such matters, he lived them. This faith was quiet, sincere, and abounding. In his last years it permeated his being, and though borne down by deafness and approaching blindness, he faced life from day to day with quiet happiness.

From end to end of this continent people will mourn the loss of a great friend. To those of us who felt we

knew him best, his passing is a severe blow only compensated by the inspiration which the recollection of his personality and achievements creates for us. It renews in us the conviction that the practice of medicine still remains an Art as well as a Science, and that this Art is founded on, and finds its outlet through the abiding principles of Faith in, Hope for, and Charity to all mankind.

H. L. SCAMMELL

Dr. John MacDonald Oswald, retired physician, died at his home in Toronto on March 23. Born in Scotland, he received his early education at Dollar Academy. He graduated in medicine from the Toronto University in 1901. He practised for a few years in North Dakota, then for thirty-five years in Edmonton, Alberta.

Le docteur L.-G. Perrin un médecin distingué de Québec, est décédé le 11 juillet à l'hôpital de l'Enfant-Jésus, à l'âge de 64 ans. Le docteur Perrin avait fait ses études chez les Sulpiciens et avait gradué à l'Université de Montréal. C'est dans les sanatoria des Etats-Unis qu'il commença sa carrière médicale. Après avoir professé une dizaine d'années à ces endroits, il vint s'établir à Québec où il se spécialisait depuis trente-cinq ans. Ancien président de la Société médicale St-Roch-Jacques-Cartier, le docteur Perrin se dépendait aussi en faveur de plusieurs groupements. Sa disparition causera de vifs regrets. Le docteur Perrin laisse dans le deuil, madame Perrin, une fille, et un fils.

Dr. Gordon Manning Peters, aged 40, of Glace Bay, was killed in a highway accident about three miles from his home on June 24. Involved in the accident were his two small sons who were killed, and his wife who was seriously injured. Dr. Peters graduated from Dalhousie University in 1936 and had practised in his home town ever since.

Dr. Albert Carman Ricker, aged 72, medical practitioner in Toronto and vicinity for 42 years, died on July 13. Dr. Ricker was born at Dunnville. He graduated from the University of Toronto in Arts in 1906 and two years later in Medicine. For a few years he practised in Mimico before establishing a practice in the High Park district. He was on the staff of St. Joseph's Hospital. He was an honorary life member of Connaught Lodge, A.F. & A.M., and a member of Erskine United Church. He leaves his widow, two daughters, and one son.

Dr. William Lloyd Ritchie died on July 24 in Montreal after an illness of six weeks. Born in 1883 at Beamsville, Ont., Dr. Ritchie attended school there before entering Toronto University, from which he graduated as a bachelor of medicine in 1910. Later he went into general medical practice in Saskatchewan and British Columbia. Dr. Ritchie afterwards undertook training in radiology with Lewis G. Cole, in New York, and returned to Canada to take up the appointment of assistant radiologist at Toronto General Hospital. His next appointment took him to the Ottawa Civic Hospital as radiologist-in-chief. Just 25 years ago. Dr. Ritchie was appointed director of radiology at the Montreal General Hospital, and served the hospital in this capacity until his retirement in 1948. At the same time he was chairman of the department of radiology at McGill University, with the rank of associate professor of radiology. One retirement from active duty in both positions he became radiological consultant to the Montreal General Hospital, and served as radiologist of the Herbert Reddy Memorial Hospital, positions he held at the time of his death. Dr. Ritchie was considered the senior radiologist of Canada. He was a Fellow of the Royal College of Surgeons of Canada, and a former honorary secretary-treasurer of the Canadian Association of Radiologists. He was a member of the University Club and, in his younger days, was an active badminton player. He was a member of the University Lodge of Montreal A.F. & A.M. He is survived by his widow, three daughters and four grandchildren.

Lieut.-Col. Albert St. Clair Rumball, M.D., aged 48, formerly of Winnipeg, died on June 18. At the time of his death he was in medical practice in Regina and was en route by motor to give a paper at a convention of the Canadian Anaesthetists' Society at the Seigniory Club, Quebec. Dr. Rumball was born in Morden, Man. He was educated at Morden and Winnipeg, graduating from the Manitoba Medical College in 1927. On graduation he became associated with the Templeton Clinic in Brandon and practised in that city until he enlisted in 1939 in the R.C.A.M.C. Overseas in January, 1940, he continued in service as major with No. 5 General Hospital until 1944 through the Sicily and Italian campaigns. In the latter campaign he was mentioned in despatches. In 1944 he was promoted to Lieut.-Col. and appointed consultant in anaesthesia to the Canadian Army Headquarters Medical Services in London. He served in this capacity until the end of the war. On his return to Canada he resumed practice of his profession in Winnipeg on the staff of Deer Lodge Hospital. In 1947 he accepted a partnership with Dr. B. C. Leech and associated anaesthetists in Regina. Besides his widow he is survived by a son and daughter.

Dr. Reginald Brant White of Penticton, B.C., died in May of this year. Born in Pembroke, Ontario, on October 20, 1873, he graduated from McGill University in 1896. His life was spent in practice in British Columbia, first in Fairview, then in Penticton, and he has left the memory of a well-beloved doctor of the best type, who earned the respect and affection of the community he served so well. He found time to act as the President of the College of Physicians and Surgeons of British Columbia. He leaves a widow and two sons.

Dr. R. J. D. Williamson, died on July 6, in North Bay, following a cerebral haemorrhage. He was 34. Born in Verdun, Que., Dr. Williamson had been a resident of North Bay most of his life. He established a practice here in December, 1948. A graduate of the University of Toronto and the Mayo Clinic, Rochester, Minn., he specialized in ear, nose and throat surgery and had done notable work in this field during his brief career. Dr. Williamson was an outstanding student at North Bay Collegiate, and graduated in medicine at University of Toronto in 1940. He interned at the Hamilton General Hospital and then went to the Mayo Clinic to take his fellowship as an ear, nose and throat specialist. Dr. Williamson then practised in Calgary and Edmonton. Returning East, he was a member of the Lockwood Clinic staff in Toronto for some time before giving up this position to establish his practice in North Bay.

NEWS ITEMS

Alberta

Dr. and Mrs. Mark Marshall, with their son are touring Europe and will be returning to Edmonton in the Fall. Dr. Marshall has associated with him in eye diseases Dr. Winston Duggan, who took his postgraduate training in New Orleans.

Dr. N. W. Woywitka has opened offices in Edmonton specializing in Diseases of the Eye. Dr. Woywitka is a graduate of the University of Alberta and took his post-graduate training in Toronto.

Dr. Richard Poirier of Edmonton has Dr. R. C. Corbett associated with him in his practice in Diseases of Infants and Children.

Dr. J. J. Lipinski has commenced practice as physician and surgeon in Edmonton.

Dr. Walter C. MacKenzie has been appointed Professor of Surgery at the University of Alberta. He will

succeed Dr. H. H. Hepburn who will be retiring from the chair in October but will remain head of the Neuro-surgical Department of the University hospital. Dr. MacKenzie is a graduate of the University of Dalhousie and took his postgraduate training at the Mayo Clinic. During the war he served with the Royal Canadian Navy.

6. The preparations for the annual medical convention in Calgary are well under way and it is expected the greatest attendance of the history of the Association will be registered this year. W. CARLETON WHITESIDE

British Columbia

The program for the Fiftieth Annual Meeting of the British Columbia Medical Association is now taking shape and will shortly be published in *The Bulletin*. An unfortunate change will have to be made. It had been expected that Dr. Charles Hill, the well-known Secretary of the British Medical Association, would be present. Dr. Hill was in Canada some time ago, at the Winnipeg meeting of the Canadian Medical Association, and his talks and wise counsels made a very deep impression on all with whom he came in contact. Recent developments in England have made it impossible for him to come to British Columbia this year.

The profession in British Columbia has great cause for mourning, in the recent death on July 31, of Dr. A. J. MacLachlan, who for many years has served it so faithfully and well as Registrar of the British Columbia College of Physicians and Surgeons. Dr. MacLachlan had been a sick man for a long time, and only his courage and devotion to his work as Registrar kept him actively on duty. It will be very hard to replace him. He had a fund of sagacity combined with experience that made him most valuable in the position he held.

The Medical Faculty at the University of British Columbia is now about ready to go. Lectures will begin on September 7, 1950, and the positions on the teaching staff of the School are, we understand, completely filled. The list has not yet been made public. Some 340 applicants, men and women, have registered for enrolment. Only 60 can be accepted. So far 50 have been chosen, three from outside the Province.

A very welcome note from the Department of Public Health is the relative absence this summer of polio. So far, only a few cases have been reported, and the picture is very much brighter than it has been for the past few years.

The Committee charged with research into the use of ACTH and cortisone in the Vancouver General Hospital made a very comprehensive report at a recent meeting of the Vancouver Medical Association. This report gave evidence of very careful work and a great deal of study of contemporary research. It showed how very much in the experimental stage we still are. Reports of cases, given accurately without undue optimism, and with no over-emphasis on the results so far obtained, show how very careful we must still be not to excite unfounded hope or create a feeling of optimism not justified by the facts. It is to be regretted, in this regard, that so much unwise publicity has been given to the apparently good results, which later proved to be only temporary and short-lived. It is only fair to those who have been working in this field to say that this publicity was none of their doing.

Forty-six British Columbians were successful in passing the spring examinations of the Medical Council of Canada, held at various points in the Dominion. The list is too long to publish here, but we notice several sons of B.C. doctors. Included are Harry Herschel Pitts, son of Dr. H. H. Pitts of Vancouver, Lyon Henry Appleby, son of Dr. L. H. Appleby of Vancouver, John Graham Gillis, son of Dr. J. J. Gillis of Merritt, and some others whose names recall those of confrères of

ours. A Canadian of Indian (Sikh) descent is Sargit Kaur Kapoor Siddoo, who has recently been intern at the Vancouver General Hospital, as was Dr. Dodd Quan Chu, Canadian of Chinese descent.

Dr. Robert E. McKechnie of Vancouver recently flew to Buenos Aires to attend the World Congress of the International College of Surgeons. He had been invited to read a paper before the meeting. Another of his duties was to accept the charter for the new Canadian Chapter of the I.C.S.

The Queen Alexandra Solarium of Cobble Hill, Vancouver Island, so well-known for its outstanding work with crippled children, recently celebrated its twenty-third birthday. The occasion was marked by entertainments for the children, bands and extra cake rations. The Solarium is really the dean of this type of institution in British Columbia. Started in 1927, largely through the efforts of Dr. Wace of Victoria, it has led the way in the rehabilitation of crippled children, victims of polio, spastics, deformities, etc. Like the Preventorium in Victoria, which began its work after the Solarium, it provides educational facilities for those who are under treatment.

J. H. MACDERMOT

Manitoba

The Manitoba Hospital Service Association (Blue Cross Plan) has recently occupied its new two-storey building on Edmonton Street, Winnipeg, near Broadway. The building is attractive in design and construction, and will suffice for the Association's needs for some years to come.

Dr. John Brown has resigned from the Health unit at Steinbach and has gone to Tranquille, B.C.

Dr. W. C. Guest who has been taking postgraduate work at Boston has opened an office at 309 Medical Arts Building, Winnipeg. He will practise with Dr. Norman Elvin, ophthalmologist.

Dr. Alan Parkin, Man. '49, gold medalist in psychology, was married at Kitchener, Ont., on June 24 to Dr. Mary Elizabeth McGanity, daughter of Dr. McGanity of Kitchener. In September Dr. and Mrs. Parkin will sail for London, Eng., for four years of postgraduate study.

Dr. G. B. Leyton of London has arrived in Winnipeg to become director of laboratory services for the Manitoba Department of Health and Public Welfare. He is a graduate of Cambridge University and during his service in the R.A.M.C. he was captured by the Germans in North Africa and spent two years in prisoner of war camps. After the war Dr. Leyton took postgraduate work at London University where he received a diploma in clinical pathology. He is accompanied by his wife and two small daughters.

ROSS MITCHELL

New Brunswick

Dr. Stanley Calnek of the Pension Staff at the D.V.A. at Saint John is at present in hospital following a successful operation for gangrenous appendicitis.

The writer of these notes was privileged to attend a perfectly planned refresher course at Halifax recently. The arrangements were made by Dr. H. B. Atlee and his staff of the gynaecological service of the Victoria General Hospital. Prof. Hans Kottmeier of the Radium-Hennett, Stockholm, conducted clinics each day in diagnosis and treatment of cancer of the female pelvis—and also indicated new advances in treatment of cancer, generally, with especial reference to radiation therapy.

The provincial press has given much space lately to news of a new hospital building for Moncton City on a new site and also for a new hospital at St. Stephen. Both will give much added accommodation and greater space for diagnostic facilities. In both cases assistance has been assured in the building costs by grants from the federal and provincial governments. Tenders have been called for new construction at the Saint John Tuberculosis Hospital—including a nurses' home and surgical unit.

Dr. D. C. Steeves of Moncton is using a cancer society grant to study oral cancer at the Memorial Hospital in New York.

Federal aid for the care of mental patients will provide salaries for a full-time dentist, an occupational therapist and a psychiatric social worker at the provincial hospital at Fairville. A. S. KIRKLAND

Ontario

Dr. Mackinnon Phillips has been appointed minister of health succeeding Hon. Russell T. Kelley, who has been ill since the last session of the legislature. Dr. Phillips, a resident of Owen Sound has been a member of the legislature since 1945. The outlay of the health department has doubled in four years and nearly quadrupled since prewar times.

The President of the University of British Columbia has announced the appointment of Dr. Robert Bews Kerr, O.B.E., M.R.C.P.(Lond.), F.R.C.P.[C.] to be the first Professor of Medicine and head of the Department of Medicine in the newly organized Faculty of Medicine at the University of British Columbia. He will be missed in Toronto where he has been Professor of Therapeutics, member of the medical staff of the Toronto General Hospital and President of the Toronto Diabetes Association.

The Charles Mickle Fellowship for 1950 has been awarded by the University of Toronto to Dr. Selman A. Waksman, Department of Microbiology, Rutgers University, for his discovery and isolation of streptomycin.

The W. K. Kellogg Foundation has awarded travelling fellowships for study in the United States to Dr. William P. Callahan of the Department of Ophthalmology, and to Dr. Charles P. Rance of the Department of Paediatrics, Faculty of Medicine, University of Toronto.

The central laboratory of the Ontario Department of Health has moved to new quarters in what used to be Christie Street Hospital. This laboratory is the second oldest public health laboratory on the continent. It started in 1890, just four years after the one in the State of Kansas began. The home of the first Ontario laboratory was over a shop in Yonge Street. This is its fifth location. A section is being built for virus work, where the workers can handle material under conditions of great precautions.

The Ontario Medical Association has established a study committee under the chairmanship of Dr. G. I. Sawyer of St. Thomas to draft proposed medical by-laws for hospitals. A special session of Council will be held in December to receive the report of this committee.

The annual Lakehead Summer School will be combined with District meeting of No. 10 at Port-Arthur-Fort William on September 7, 8 and 9. Dr. G. C. Ferguson, Port Arthur, is the District Counsellor. Guest speakers will be: Dr. J. C. Luke, Montreal, surgeon; Dr. G. A. Copping, Montreal, physician; Dr. A. J. Elliott, Toronto, oculist; Dr. N. W. Roome, Toronto, urologist.

District No. 9 will meet at Sault Ste. Marie on September 11 and 12. The District Counsellor is Dr.

M. M. Fisher, Gravenhurst. Guest speakers are to be: Dr. Walter Reich and Dr. Philip Thorek both of Chicago; Dr. W. M. Scriven, Montreal and Dr. Wallace Graham of Toronto.

A special meeting of the Federation of Medical Women of Canada will be held on September 5 and 6 at Toronto to entertain delegates to the International Medical Women's Association in Philadelphia. There will be about sixty guests from many different countries. Headquarters of the meeting will be Women's College Hospital. There will be visits to hospitals and institutions followed by a scientific session. Sunnybrook Hospital is entertaining the party for lunch. There will be a banquet at the Royal Canadian Yacht Club and a lunch given by the Board of Directors of the Women's College Hospital. The Lieutenant-Governor and Mrs. Ray Lawson are holding a reception at the Parliament Buildings. There will be a trip to Niagara Falls and a dinner there to which United States doctors have been invited.

LILLIAN A. CHASE

Quebec

Les docteurs Origène Dufresne, directeur de l'Institut du Radium de Montréal, Charles Leblond professeur d'anatomie à l'Université McGill, Carleton Pierce, professeur de radiologie au même endroit, E. Perron, professeur de radiologie à l'Université Laval, Louis-Charles Simard, professeur d'anatomie pathologique à l'Université de Montréal, Morris Simon professeur d'anatomie pathologique, au Jewish Hospital, ont assisté au Ve Congrès International du Cancer qui a eu lieu récemment à Paris. Plusieurs de ces médecins assisteront aussi au VIe Congrès International de Radiologie à Londres.

Le docteur Louis-Charles Simard, directeur de l'Institut du Cancer de l'Hôpital Notre-Dame vient d'être élu président de la section des sciences biologiques de la Société Royale du Canada.

Le professeur Emile Gaumond de l'Université Laval a été choisi comme président de la Canadian Dermatological Society au cours de la dernière assemblée annuelle tenue à Québec. Le docteur Paul Poirier, chef de service à l'Hôtel-Dieu de Montréal et professeur agrégé de dermatosyphiligraphie a été élu vice-président. Le docteur S. Grimes, d'Ottawa a été réélu comme secrétaire.

L'Hôpital Notre-Dame de l'Espérance, de ville Saint-Laurent a reçu une subvention de \$42,000 du gouvernement fédéral. Ceci l'aidera à augmenter le nombre de ses lits à 102.

Le docteur Gilles Bertrand qui est revenu d'Europe dernièrement après un stage d'un an est maintenant rendu à Toledo où il fera une année de chirurgie générale.

YVES PRÉVOST

Saskatchewan

The Council of the College of Physicians and Surgeons held its regular mid-summer meeting in Prince Albert on Saturday, July 15. The Council were the guests of Dr. R. W. Kirkby and the Sanatorium at Prince Albert. The problem of administration of public plans for medical care continues to be a live topic and the need for continuing to stress the importance of the non-political type of commission was realized. Another subject that is important these days is the method of payment for medical services from a third party or plan where all the physicians in the province are involved. It becomes necessary to decide what factors influence payment to members at specialist fees. It was decided by the Council that payment at specialist rates would be made to those who not only possessed approved credentials but

who were confining their practice to a particular branch of medicine.

An Order-in-Council has been instituted on behalf of the Workmen's Compensation Board to apply penalties for late billing of physicians' accounts. The Council felt that this was entirely unfair in principle but no immediate action is contemplated.

Dr. J. F. C. Anderson was nominated by the Council to act for a second term on the University of Saskatchewan Senate.

A committee was established to make a study and survey of laboratory and diagnostic facilities in the province. The committee will report back to Council such information as will indicate the present supply of facilities and suggestions how the supply and availability and quality of these facilities may be improved.

Dr. G. C. Bradley was nominated to the position of Chairman of the Central Medical Assessment Board.

On Sunday, July 30, a meeting was held of the committee for the study of prepaid medical care. This Committee is composed of members from each of the two plans in the province. The Committee is established by the Council to study the problem with a view to organizing a single plan or pattern within the Province of Saskatchewan. It is felt that considerable progress was made.

New registrants in the province are Dr. D. B. Albertson to the Medical Arts Clinic in Regina; Dr. J. D. Blaine to Val Marie; Dr. W. H. Blair to Yellow Grass; Dr. J. Bradley, Regina; Dr. W. A. Costantini, Saskatoon; Drs. S. B. and W. A. Fowlow to Arborfield; Dr. W. H. Fry to Shellbrook; Dr. J. S. Kennedy to Climax; Dr. V. Kleider to Lanigan; Dr. J. Lemiszka to Vonda; Dr. D. K. Merkeley with the R.C.M.P. in Regina; Dr. W. E. J. Pourbaix to Prince Albert; Dr. L. W. Shannon to Maryfield; Dr. J. E. Sinder to Nipawin and Dr. H. B. Struivig de Groot, Regina.

G. G. FERGUSON

General

Postgraduate course, sponsored by the University of Toronto Medical Alumni Association, is to be held in Toronto, Tuesday, Wednesday, Thursday and Friday—October 17, 18, 19 and 20. Course being given in conjunction with Ontario Medical Association and we plan to have a highlight course covering general topics of interest to the general practitioner. Panel discussions will be used, clinical demonstrations, as well as formal lectures. This is to be different from the usual previous courses and should be of extra interest to general practitioners. Annual meeting of the Medical Alumni Association will be held at Sunnybrook Hospital at a luncheon meeting during the course. Football tickets will be provided for the big game on Saturday, October 21. Those who plan to attend should be sure to make their arrangements early.

The American Academy of Allergy will offer a Post-graduate Course in Allergy to be given at the Royal Victoria Hospital, and The Queen Mary Veterans' Hospital, Montreal, on October 26, 27 and 28, 1950. The Course is sponsored by the Faculty of Medicine of McGill University and will deal with the more recent advances in the field of allergy, and in particular with the relation of the endocrine glands to hypersensitivity. The participants will consist of both local guest speakers. Information, and applications for attendance may be sent to Dr. B. Rose, McGill University Clinic, Royal Victoria Hospital, Montreal. The fee will be \$40.00, but full-time local men and residents are exempt.

The American Urological Association offers an annual award of \$1,000.00 (first prize of \$500.00, second prize \$300.00 and third prize \$200.00) for essays on the result of some clinical or laboratory research in Urology. Competition shall be limited to urologists who have been in such specific practice for not more than five years and to men in training to become urologists. For full

particulars write the Secretary, Dr. Charles H. de T. Shivers, Boardwalk National Arcade Building, Atlantic City, New Jersey. Essays must be in his hands before February 10, 1951.

Book Reviews

Origin of Medical Terms. H. A. Skinner, Professor of Anatomy, University of Western Ontario. 379 pp. \$9.00. The Williams & Wilkins Co., Baltimore; Burns & MacEachern, Toronto, 1949.

There is a need for such a dictionary as this, but it is a very ambitious project. Dr. Skinner does well to go back to the Greek and Latin roots of our medical terms. They are a great help in fixing the meaning of words, although now and then he is apt to push the original sense of the word a little too far. The Dictionary will be found extremely useful.

Roentgen-ray Examination of the Digestive Tract. R. Golden, Professor of Radiology, the College of Physicians and Surgeons, Columbia University; Director of the Department of Radiologic Service, The Presbyterian Hospital, New York. 350 pp., illust. Thomas Nelson & Sons, New York, 1949.

Those who are familiar with Nelson's *Loose-Leaf Diagnostic Roentgenology* will need no introduction to this fine text reprinted from it. The material and arrangement are exactly the same as in the original. There is a large bibliography and a complete index. This is a lucid and comprehensive text which should be greatly appreciated by roentgenologists not already familiar with this work, as well as all clinicians interested in gastro-enterology.

A Short History of Physiology. K. J. Franklin, Professor of Physiology at the Medical College of St. Bartholomew's Hospital. 147 pp., illust., 2nd ed. \$2.00. Staples Press, New York and London, 1949.

This is a concise, short outline of the development of physiology from the sixth century B.C. to the end of the nineteenth century of our era. The author obviously has intended it as an introduction and brief historical reference book for students in physiology, and accordingly has cast it in the language and idiom of a scientific textbook. There is thus no pretense at historical writing. However continuity and clarity are well achieved within this narrow frame, and the volume would seem to achieve its aim in providing a ready source of historical information and perspective for medical students. This new edition appears in a more attractive format and incorporates the additions to historical knowledge of the past twenty years.

Intestinal Intubation. M. O. Cantor, Assistant Attending Surgeon, Grace Hospital. 333 pp., illust. \$9.00. Charles C. Thomas, Springfield; The Ryerson Press, Toronto, 1949.

The use of the indwelling tube in the management of certain gastrointestinal lesions has now been universally accepted. Especially in the pre- and post-operative treatment of intestinal obstruction, this tube, combined with a better understanding of electrolyte balance, has reduced the mortality by at least 50%. However, the technique necessary to get the tube past the pylorus and down the small intestine is not too clear to most people using this method of therapy. This monograph has been written to combine in one volume all that is known on this subject. The chapters on normal and pathological bowel physiology are excellent and stress the damage to bowel absorption, circulation and motility as the result of distension. The technique of passing the Miller-Abbott, Harris and especially the Cantor tube is carefully described, with emphasis on the need for common sense and a knowledge of bowel

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anatomy and physiology by the intubator. The phenomenon of diffusion of intestinal gases through the rubber and into the lumen of the propelling balloon is discussed in the closing chapters and the only criticism that might be offered on this book is that this phase of the subject is unduly prolonged. This monograph contains a great deal of excellent material and will be of considerable assistance to abdominal surgeons in their understanding and treatment of intestinal distension.

Penicillin. Sir A. Fleming, Professor Emeritus of Bacteriology, University of London; Principal, Wright-Fleming Institute of Microbiology, St. Mary's Hospital Medical School, London. 491 pp., illust., 2nd ed. Butterworth & Co. (Publishers) Ltd., London, 1950.

This is probably the most complete and authoritative volume in existence on this particular subject. There are six different authors participating in the writing of the general aspects of the subject. This second edition has been brought up to date by adding new chapters on the toxic manifestations of penicillin and its use in acute infectious diseases. It also contains two appendices—the one dealing with penicillin resistance and the other with two other antibiotic drugs, chloramphenicol and aureomycin. The book presents this interesting and timely subject in great detail. It is a most valuable reference volume for clinician and laboratory investigator.

Breast Deformities and Their Repair. J. W. Maliniac, Clinical Professor of Plastic Reparative Surgery and Associate Attending Plastic Reparative Surgeon, New York Polyclinic Medical School and Hospital, New York City. 193 pp., illust. \$12.00. Grune & Stratton, New York; The Ryerson Press, Toronto, 1950.

Plastic repair of abnormal breasts has been described in current literature from time to time but presentation of the subject in book form is a new idea. The attitude of general surgeons toward interfering with ptosed or hypertrophied breasts have been lukewarm as a rule. The old aphorism "Amputation is a surgeon's defeat" was often disregarded and the makers of supporting corsets were encouraged. In this book Dr. Maliniac argues for reconsideration of the problem which involves relief from pain both psychic and somatic. He reviews the methods which have been advocated and explains the disasters which have so often followed when surgeons have risked the blood supply in reforming an unsightly breast into a structure more ideal in shape and position. Thorough anatomical studies are described which should guide the operator in bringing an abnormal breast back to an approved site and size and, in many instances, preserve normal function. The work is well illustrated and techniques are described with emphasis upon the two stage operation evolved by the author after a very large experience. The section of gynaecomastia is most capably handled. The book can be read in a couple of hours and will doubtless be welcomed especially by specialists in plastic surgery.

Essential Urology. F. H. Colby, Chief of the Urological Service, Massachusetts General Hospital. 580 pp., illust. \$9.00. The Williams & Wilkins Co., Baltimore; Burns & MacEachern, Toronto, 1950.

Dr. Colby states that this book is written mainly for students and is based on the teachings at the Massachusetts General Hospital. The first section of the book dealing with the embryology, anatomy and physiology of the genito-urinary organs is a splendid presentation of a phase of urology which is difficult to express clearly to students. The second section consists of one chapter devoted to methods of examination of the urological patient. In the third section the various diseases of the genito-urinary organs are well described, care being taken to emphasize the gross and microscopic pathology. The radiographs are well chosen. But the reproductions of the photographs of gross specimens, microscopic sections and patients themselves leave a great deal to be

desired. They are not clear, and are not self-explanatory of the condition they are said to represent. A few well chosen coloured illustrations of e.g., carcinoma of the bladder, extrophy of the bladder, polycystic kidney disease and renal tuberculosis would greatly improve the text. This book offers the student a comprehensive and authoritative account of diseases of the genito-urinary system.

Rehabilitation, Re-education and Remedial Exercises.

O. F. G. Smith, formerly Principal of the Swedish Institute, London. 456 pp., illust., 2nd ed. \$4.75. Baillière, Tindall & Cox, London; Macmillan Co. of Canada, Toronto, 1949.

This is more detailed than the first edition. More illustrations of equipment have been used, and more details regarding some of the exercises have been added. It is a book which is of inestimable use both to practising physicians and physiotherapists, as it gives in detail the exercises for practically every muscle and joint in the body. Many ingenious devices for encouraging patients to undertake such exercises are described, and at the present time there is no other text which covers the subject so extensively. The book is well written and easy to assimilate, as was the first edition.

The Arthropathies. A. A. deLorimier, Radiologist, Saint Francis Hospital, San Francisco. 335 pp., illust., 2nd ed. \$7.00. Year Book Publishers Inc., Chicago.

The author has revised this excellent book keeping the same general outline and most of the original text while introducing certain improvements. Each disease entity is now introduced by a short general discussion preceding the radiological description. The disconcerting large wavy arrows on the illustrations have been replaced by small ones and new figures have been added. Another new addition is a short chapter on the temporomandibular joint.

Comparative Anatomy and Physiology of the Larynx.

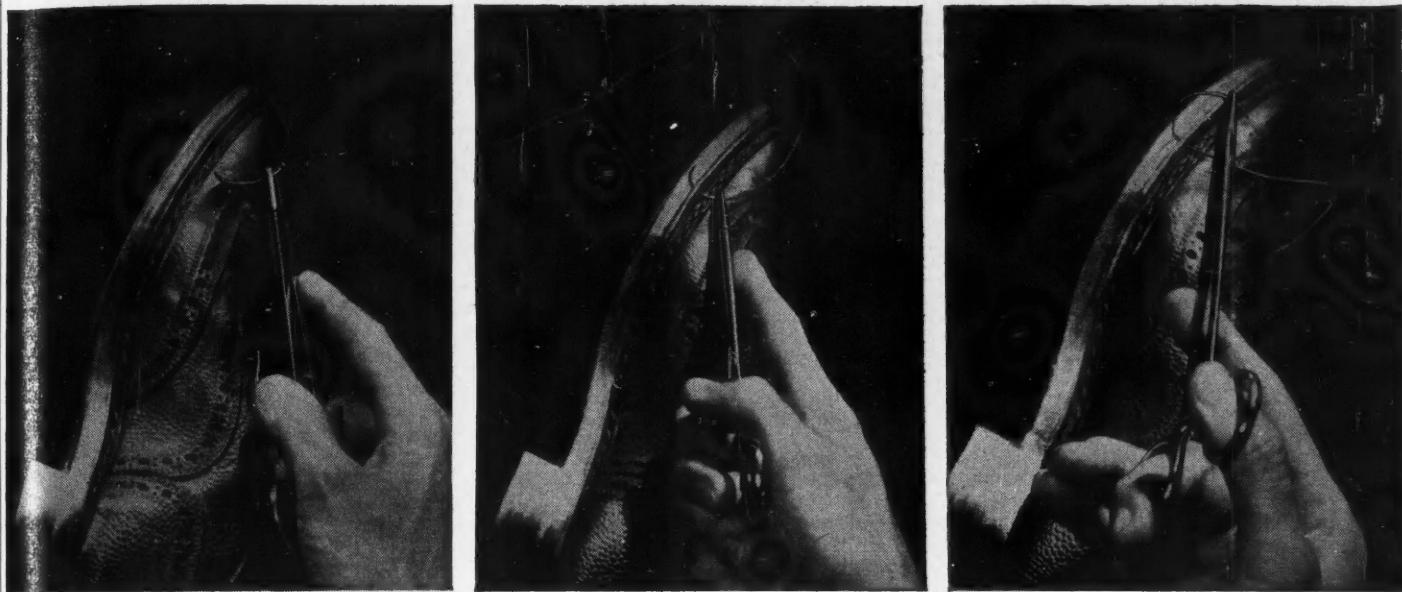
V. E. Negus, Surgeon to the Ear, Nose and Throat Department, King's College Hospital, London. 230 pp., illust. 30s. Messrs. William Heinemann Medical Books Ltd., London, 1949.

This book is well written on good paper and in clear type so that its reading is both easy and delightful. It is really an atlas for it contains 190 illustrations, many of which are multiple. Besides the anatomy and physiology of the larynx there are outline drawings of the animals as they appear in actual life. The writer begins with the primitive larynx of fish and amphibians in which the organ is only a sphincter to protect the lungs and not intended for vocal purposes. He traces the evolution through all animals to mammals and eventually to the versatile type found in man. In man, the larynx has cartilages and muscles especially adapted for guarding the chest when swallowing and producing a great range of sounds. These muscles and cartilages have a relationship with olfaction and the sounds are harmonized with hearing.

Introduction to the Study of Experimental Medicine.

C. Bernard. 226 pp. \$3.50. Henry Schuman Inc., New York, 1949.

This is a book which can well be read by all students or physicians interested in experimental medicine. Claude Bernard was the man who perhaps did most to establish experimental medicine as a true science and contributed so much of lasting value over a wide range of the subject. In this volume he states his philosophy of research. The greatest value of the book, however, is in the picture it gives of the man himself. His phenomenal powers as an observer of nature and, above all, his great integrity as a man and as a scientist become more and more apparent with each succeeding chapter. Perhaps the most interesting section of the book is the last, in which he describes how he himself went about performing various experiments. The translation is excellent.



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Electrocardiography. L. Wolff, Visiting Physician, Consultant in Cardiology and Chief of the Electrocardiographic Laboratory, Beth Israel Hospital. 187 pp., illust. \$5.25. W. B. Saunders Co., Philadelphia; McAinsh & Co. Ltd., Toronto, 1950.

It was a wise decision on the author's part to write this book despite the many volumes already available on the subject. Dr. Wolff brings to the subject the freshness and understanding of the good teacher who simplifies his explanations in order to provide his students with a clear grasp of essentials. This book should thus prove valuable not only to undergraduates but to general practitioners as well. It is not a compendium of electrocardiography, nor is it a detailed list of patterns to be memorized. It is instead a short treatise which covers the basic principles of the electrocardiograph in clear and simple terms and proceeds from this background to an analysis of the clinically important distortions of the tracing. The author helps the reader to anticipate logically those changes in the electrical tracing which appear in disease so that, faced with an alteration in the record, he can reason out the underlying condition. Cardiographic interpretation becomes a game rather than a set of tedious memory exercises. This treatment is healthy even if the more knowing reader may disapprove of some of the simplifications. On the whole, the author achieves his end remarkably well, leaving the reader with at least an understanding of how far he may rely on the electrocardiograph and where its value is limited.

Aviation Medicine. K. G. Bergin, British Overseas Airways Corporation. 447 pp., illust. \$8.75. John Wright & Sons Ltd., Bristol; Macmillan Co. of Canada, Toronto, 1949.

This should be a useful adjunct to the *ab initio* "flying" doctor. Its almost pocket-size dimensions make it an excellent ready reference book. Physiology, medicine, psychology and preventive medicine as applied to air travel are the general fields covered. For the most part these topics are ably discussed in a clear and concise manner. It is not understood, however, why the author wasted valuable pages on such minor aviation subjects as alcohol and nicotine—subjects that could have been dismissed in a short paragraph. Dr. Bergin's personal experience for many years as a qualified pilot along with his association during World War II with the Medical Branch of the Royal Air Force gives him a tremendous grasp of actual flying problems and their solution. The comfort and safety of airline passengers is now the author's occupation and his considerable knowledge in this field becomes apparent throughout the latter part of the book.

Vitaminology. W. H. Eddy, Emeritus Professor of Physiological Chemistry, Teachers College, Columbia University and Scientific Director, American Chlorophyll Inc. 365 pp. \$6.00. The Williams & Wilkins Co., Baltimore; Burns & MacEachern, Toronto, 1949.

This book is written by one of the acknowledged masters of the subject which he chooses to call "Vitaminology". None but a master could so adequately cover this complex field with such brevity and simplicity. The functions in the body, forms, chemistry and evaluation in human and animal nutrition of each vitamin are discussed. Emphasis is laid upon recent advances, but historical background is not neglected. The book is highly recommended to all who are interested in vitamins from any standpoint. For clinicians, it provides a foundation upon which the intelligent use of vitamins in practice can be based. The value of the book is increased by the pleasantly informal foreword by Casimir Funk, a pioneer who takes historical precedence over even Dr. Eddy. The use of the word "vitaminology" may cause some surprise. As the reviewer of this book for *The Lancet* has said, "Vitaminology is not a pleasant word". Judging from the foreword, Dr. Funk has given it his approval. Since it was Dr. Funk who introduced the word "vitamine" almost forty years ago, he can take liberties not permitted to others and his

willingness to sponsor "vitaminology" will no doubt ensure its acceptance. It is to be hoped, however, that those who write of other nutrient elements will not follow suit.

Buchanan's Manual of Anatomy. Edited by F. W. Jones. 1566 pp., illust., 8th ed. \$8.50. Baillière, Tindall & Cox, London; Macmillan Co. of Canada Ltd., Toronto.

It is to be hoped that this textbook will grow in popularity in America where as yet it is not too well known. For many years it has been a standard text in Britain and its recent re-editing in 1947, along with the present revision, should enhance its popularity. On this continent, anatomy is usually taught from the regional viewpoint, yet students are always bewildered by being referred to texts which deal with the subject systematically. Buchanan's manual is entirely regional in treatment, carefully handled and reasonably complete—as such it is a reference text of choice. At first sight the absence of coloured illustrations may be depressing, but with growing familiarity the student should find the excellent line drawings clear and straightforward.

Infant Nutrition its Physiological Basis. F. W. Clements, Senior Medical Officer, Commonwealth Department of Health, Australia; Chief, Nutrition Section, World Health Organization, Geneva. 246 pp. \$4.00. John Wright & Sons Ltd., Bristol; Macmillan Co. of Canada Ltd., Toronto, 1949.

This book deals with the physiology of fetal and infant nutrition in a most exhaustive manner. It includes not only the fundamental requirements but the mineral and vitamin elements as well, of the fetus, premature infant, and normal infant, and the maternal physiology in relation to the nutrition of the fetus and breast fed infant. A full record of the nutritional elements which pass the placental barrier during the various stages in the life of the placenta as it undergoes degeneration with increasing permeability is included, and as a result some new points in the nutritional requirements of the premature infant are developed. The section on the composition of human milk and cows' milk is also complete and gives valuable information on the changes in the composition of milk caused by the diet of the mother, her emotional state, menstrual activity and taking of various drugs.

The final chapters on the practical application of the principles outlined in the physiological discussion are perhaps a little sketchy, but are quite adequate if the physiological basis is well understood as it should be after a study such as is presented by the author. This is a really modern treatment of the subject and a book which should be of interest to the general practitioner as well as the paediatrician.

Streptomycin—Its Nature and Practical Application. Edited by S. A. Waksman, New Jersey Agricultural Experiment Station, Rutgers University. 618 pp., illust. \$10.00. The Williams & Wilkins Co., Baltimore; Burns & MacEachern, Toronto, 1949.

Streptomycin represents an additional testimonial to the speed with which, through co-ordination, new anti-bacterial chemotherapeutic agents can be developed and clinically evaluated on a national scale. Within the space of a few years streptomycin has passed from the experimental laboratory stage to that of a large industry, based on extensive clinical evaluation of the drug. This book attempts to summarize the vast literature that has accumulated since the discovery of the drug was announced in January, 1944. The chief value of the book, however, is that it is not merely a summary of existing literature but contains the views of workers who are recognized as authorities in their respective fields. Some 56 contributors are listed in the volume, which is edited by Selman A. Waksman. The present status of streptomycin in various clinical conditions is clearly and concisely presented in 26 chapters each of which contains

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Recent References:

Stats, D., and Neuhof, H.: Am. J. Med. Sci., 1947, 214: 159.
 Walker, J.: Surgery, 1945, 17: 54.
 Cosgriff, S. W., Cross, R. J., and Habif, D. V.: Surgical Clinics of North America, 1948, 324.
 De Takats, G.: J.A.M.A., 1950, 142: 527.



pertinent references to the literature. The chapters dealing with the use of streptomycin in tuberculosis are of necessity more tentatively written than those on acute infections. However, the immediate results which may be expected and the limitations of the drug in tuberculosis are dealt with fully and conservatively. The purpose of the book to summarize the present status of streptomycin is ably accomplished. It should be invaluable to all who use this antibiotic.

A Twentieth Century Physician. Sir A. Hurst. 200 pp., illust. \$2.85. Edward Arnold & Co., London; Macmillan Co. of Canada Ltd., Toronto, 1949.

Sir Arthur Hurst was known to many Canadian physicians, in connection with both of the recent wars, and this volume of his reminiscences will be of interest to a wide audience. Even without a personal knowledge of him however they will be found extremely pleasant reading. His keenness of mind and width of interests are well reflected in it, and his fund of anecdotes is inexhaustible. As Professor Ryle rightly points out in the Foreword there is a characteristic lack of reference to the retractable asthma to which Hurst was a martyr. The book is well worth having.

Bridges' Dietetics for the Clinician. H. J. Johnson, formerly Assistant Clinical Professor of Medicine, New York Post Graduate Medical School, New York. 898 pp., 5th ed. \$14.40. Lea & Febiger, Philadelphia; Macmillan Co. of Canada Ltd., Toronto, 1949.

The chief virtue of the book lies in its appendix which forms almost one-third of the volume and contains much useful information. The chief fault of the book lies in the apparent failure of the editor to assess critically, condense and integrate the miscellaneous data which he and his collaborators have collected. Little attempt is made to simplify diet therapy by presenting a restricted number of basic patterns. Some of the material does not belong in a text on dietetics. Examples of items which could have been deleted are irrelevant discussions of the use of insulin, care of diabetic feet and value of laboratory tests in the diagnosis of jaundice. The unintelligible dissertations on metabolism in the section on diseases of the skin surely never would be missed. The title of the book suggests that it is intended for the use of clinicians. It seems improbable that most clinicians will have either the time or the patience to extract what they need from the mass of information presented. It may prove a useful addition to the libraries of hospital dietary departments but, apart from the worthy appendix by Marjorie R. Mattice, there are other and better books for this purpose.

Physiology in Health and Disease. C. J. Wiggers, Professor of Physiology and Director of Physiology Department in the School of Medicine of Western Reserve University, Cleveland, Ohio. 1242 pp., illust., 5th ed. \$12.00. Lea & Febiger, Philadelphia; Macmillan Co. of Canada Ltd., Toronto, 1949.

The new edition of this popular physiology text is thoroughly up to date. This book has never been a simplified statement of fact, rather, it aims to be comprehensive in all fields without infringing upon the monograph in any one. Its main value consequently lies in its ability to serve as a starting point for specialized work. At the same time those students who like to have reasonable answers to their questions without dogmatic overstatement will find this book particularly appealing. Dr. Wiggers presents a satisfactory historical background and states fairly the pros and cons of controversial subjects. In each case, however, he is careful to leave these issues with a statement of what he considers the most tenable position. It is hardly necessary to call attention to the fact that, as the title implies, the work throughout considers health and disease, contributing greatly to our

understanding of disease process in the light of normal function. Particularly noteworthy is the careful, critical handling of the physiology of the heart and circulation as well as the newer field of aviation physiology.

Fundamentals of Otolaryngology. L. R. Boies, Clinical Professor of Otolaryngology, Director of Division of Otolaryngology, University of Minnesota Medical School. 443 pp., illust. \$7.25. W. B. Saunders Co., Philadelphia, Penn.; McAinch & Co. Ltd., Toronto, 1949.

In the preface it is stated that the book is designed to offer basic instruction in otolaryngology to the student, and to provide fundamental information to the physician who is not a specialist. The book fulfills this design best in the section devoted to rhinology. Part I deals with Otology. In the discussion of deafness the differential diagnosis between conduction and perception deafness needs further elaboration. The importance and difficulties of testing bone conduction are not sufficiently stressed. As part of the treatment of conduction deafness the radium applicator is recommended, but the need for great caution in its use is not sufficiently emphasized. In the treatment of acute otitis media, ear drops are recommended for the relief of pain. It has been the experience of many that the analgesics by mouth or by hypodermic are more effective in relieving pain in an inflamed ear, and there is the added advantage that the appearance of the surface of the drum is not altered by this medication, as it is by the instillation of ear drops. The chapter dealing with vertigo gives an accurate and concise description of this complex subject, including a summary of the physiology of the labyrinth, and a résumé of what is known of Ménière's syndrome.

Part II of the book is devoted to Rhinology, and this part of the book is so well done as to justify the production of the book. The anatomy and physiology of the nose are described in a complete and practical manner. The sections on allergy and focal infection are handled in a common-sense manner. The troublesome problem of chronic sinus disease is well covered. The third and last part of the book is devoted to Laryngology. In the discussion of the anatomy the contiguous pharyngeal spaces are more fully described than usual. The difficulties of the operation of adenoectomy are given suitable emphasis. The chapters dealing with hoarseness, laryngeal obstruction, dysphagia, foreign bodies, and tumours of the nose and throat are all good.

Resuscitation and Anesthesia for Wounded Men. H. K. Beecher, H. I. Dorr Professor of Research in Anesthesia, Harvard University. 161 pp., illust. \$5.50. Charles C. Thomas, Springfield, Illinois, 1949.

This small volume by an outstanding authority on anesthesia both military and civil, will prove a welcome addition to current anesthesia literature. It is composed of articles written while the author was serving in the Mediterranean theatre of operations of the Army of the United States. The traumatic surgery and anesthesia associated with an automobile crash are not so far removed from those encountered in actual warfare and the principles outlined here are applicable to both and as such will be useful to the civilian anesthetist as well as to his military confrère.

As regards the choice of anesthetic agent, the author feels that ether and oxygen is the best for the seriously wounded patient. Sodium pentothal plays a relatively minor rôle in this type of case and spinal anesthesia is even less applicable. The latter are more useful in subsequent operations at the base hospitals after the initial period of shock has been dealt with and the emergency operation performed. The author has given serious study to all aspects of anesthesia for wounded men including the treatment of shock and resuscitation and his book may be accepted as reliable and instructive.

Continued on Page 31

Books Received

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Books are acknowledged as received, but in some cases reviews will also be made in later issues.

Postgraduate Gastroenterology. Edited by H. L. Bockus. 676 pp., illust. \$11.50. W. B. Saunders Co., Philadelphia; Macmillan Co. of Canada Ltd., Toronto, 1950.

Sifilis del Sistema Nervioso. I. De Gispert, Jefe del Servicio de Neurologia del Hospital de San Juan de Dios y del Departamento de Neurologia de la Clinica Medica Universitaria B (Barcelona). Administracion Ediciones B Y P Calle Calabria, 66 al 76, Barcelona. 332 pp. Precidi 20 Pesetas, 1949.

Los Pandadizos. R. De Vega, Professor Adjunto de la Facultad de Medicina de Valladolid. 365 pp. Precidi 20 Pesetas, Administracion Ediciones B Y P Calle Calabria, 66 al 76, Barcelona, 1949.

The Salt-free Diet Cook Book. E. G. Conason, M.D., and E. Metz, Dietitian. 137 pp. \$3.00. Lear Publishers, New York, 1950.

Lord Lister. D. Guthrie. 123 pp., illust. \$3.00. E. & S. Livingstone Ltd., Edinburgh and London, 1950.

The Principles and Practices of Rehabilitation. H. H. Kessler. 141 pp., illust. \$10.80. Lea & Febiger, Philadelphia; Macmillan Co. of Canada Ltd., Toronto, 1950.

A Textbook of Neuro-anatomy. A. Kuntz, Professor of Anatomy, St. Louis University School of Medicine. 507 pp., illust., 5th ed. \$9.60. Lea & Febiger, Philadelphia; Macmillan Co. of Canada Ltd., Toronto, 1950.

Buchanan's Manual of Anatomy. Edited by F. W. Jones. 1566 pp., illust., 8th ed. Baillière, Tindall & Cox, London; Macmillan Co. of Canada Ltd., Toronto, \$8.50.

You and Your Heart. H. M. Marvin, President, American Heart Association; Associate Clinical Professor of Medicine, Yale University. 306 pp., illust. \$3.00. Random House, New York, N.Y.

Fundamentals of Physical Chemistry for Premedical Students. H. D. Crockford, Professor of Chemistry, S. B. Knight, Professor of Chemistry, both at University of North Carolina. 366 pp., illust. \$4.25. John Wiley & Sons Inc., New York, 1950.

Continued on Page 36

RECENT and OUTSTANDING

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Edited by Samuel Soskin, Michael Reese Hospital, Chicago. A review of the different phases of clinical endocrinology. Seventy-nine articles are included, each written by an authority. 657 pages, 66 illustrations, 1950, \$12.00.

SUPERVOLTAGE ROENTGENTHERAPY

By Franz Buschke, Simeon T. Cantril and Herbert M. Parker, The Tumor Institute, The Swedish Hospital, Seattle, Washington. Clarifies the usefulness of supervoltage roentgentherapy. 311 pages, 175 illustrations, 1950, \$12.50.

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NOTICE. — FELLOWSHIP FOR CLINICAL INVESTIGATION, VANCOUVER GENERAL HOSPITAL. — A fellowship in the Department of Medicine has been established at the Vancouver General Hospital providing certain facilities for Clinical Investigation. For the year 1950-51 the tenure will be for 9 months, from the 1st of October, 1950 to the 30th of June, 1951 and thereafter it will be for 12th months, from the 1st of July, 1951 to the 30th of June, 1952, etc.

Applicants should have at least 2 years' postgraduate training or internship. Preference will be given to those individuals having training in pathology or clinical sciences. Applicants should state age, sex, marital status and school of origin; previous training and experience; publications, and should also indicate the problem that is proposed for study.

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Applications are herewith invited for the year 1950-51 (1st of October, 1950 to 30th June, 1951) and for the year 1951-52 (commencing the 1st of July, 1951). Applications for 1950-51 should be submitted as soon as possible. Applications for 1951-52 will be received up to the 1st of December, 1950. Applications should be addressed to the Chairman, Special Therapy Committee, Vancouver General Hospital, Vancouver, B.C., Canada.

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Continued from Page 31

Parkinson's Disease. W. Buchler. 79 pp. \$1.00. Mr. W. Buchler, London, Eng., 1950.

Modern Trends in Orthopaedics. Edited by Sir H. Platt, Professor of Orthopaedic Surgery, University of Manchester. 497 pp., illust. Butterworth & Co. (Publishers) Ltd., London, 1950.

Postgraduate Obstetrics and Gynaecology. F. J. Browne, Emeritus Professor of Obstetrics and Gynaecology, University of London. 501 pp., illust. Butterworth & Co. (Publishers) Ltd., London, 1950.

Studies on Tumour Formation. G. W. deP. Nicholson, late Professor of Pathology, Guy's Hospital, London. 637 pp., illust. Butterworth & Co. (Publishers) Ltd., London, 1950.

Diseases of the Eye, Ear, Nose, and Throat. A Textbook for Nurses. A. P. Seltzer, Assistant Professor in Otolaryngology, Graduate School of Medicine, University of Pennsylvania, with the technical assistance of B. C. Gettes, Diplomate, American Board of Ophthalmology; Instructor of Ophthalmology, Graduate School of Medicine, University of Pennsylvania. 347 pp., illust. 1st ed. \$4.85. McGraw-Hill Book Co., Inc., New York, Toronto, London, 1950.

Medical Physics, Vol. II. Editor-in-Chief, Otto Glasser, Diplomate in Radiological Physics, American Board of Radiology; Professor of Biophysics, Frank E. Bunts Educational Institute; Head, Department of Biophysics, Cleveland Clinic Foundation. Editorial Assistant, J. C. Tucker, Cleveland, Ohio. 1227 pp., illust. \$25.00. The Year Book Publishers, Inc., Chicago, Illinois.

Fertility in Marriage. A Guide for the Childless. L. Portnoy and J. Saltman. 250 pp., illust. \$4.00. Farrar, Straus & Co., New York.

The British Encyclopaedia of Medical Practice, including Medicine, Surgery, Obstetrics, Gynaecology, and other special subjects. Medical Progress 1950. Editor-in-Chief, Rt. Hon. Lord Horder, Physician to the King; Consulting Physician to St. Bartholomew's Hospital. 524 pp. Butterworth & Co. (Publishers) Ltd., London.

The British Encyclopaedia of Medical Practice, including Medicine, Surgery, Obstetrics, Gynaecology, and other special subjects. Cumulative Supplement, 1950. Editor-in-Chief, Rt. Hon. Lord Horder, Physician to the King; Consulting Physician to St. Bartholomew's Hospital. 481 pp. Butterworth & Co. (Publishers) Ltd., London.

Eighth Census of Canada 1941. Vol. I. General Review and Summary Tables. Published by the Authority of the Rt. Hon. C. D. Howe, Minister of Trade and Commerce. 1027 pp. Edmond Cloutier, C.M.G., B.A., L.P.H., Printer to the King's Most Excellent Majesty and Controller of the Stationery, Ottawa, 1950.

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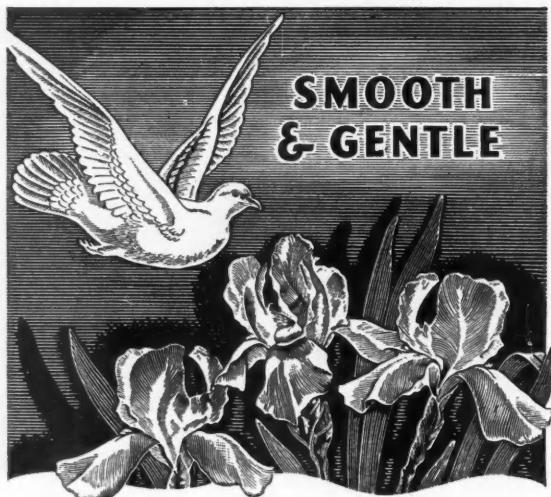
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Textbook of Endocrinology. Edited by R. H. Williams, Executive Officer and Professor of Medicine, University of Washington Medical School, Seattle. 793 pp., illust. \$11.50. W. B. Saunders Co., Philadelphia and London, 1950.

The Merck Manual of Diagnosis and Therapy. A Source of Ready Reference for the Physician. 1592 pp., 8th ed. Published by Merck & Co., Inc., Rahway, N.J., U.S.A. Export Subsidiary: Merck (North America) Inc. In Canada; Merck & Co. Ltd., Montreal, 1950.

Textbook of Healthful Living. H. S. Diehl, Professor of Preventive Medicine and Public Health, and Dean of the Medical Sciences, University of Minnesota; Director, Health Studies, American Youth Commission; former Member, National Advisory Health Council, United States Public Health Service; Member, Governing Council, American Public Health Association; former President, American Student Health Association. 776 pp., illust., 4th ed. \$4.85. McGraw-Hill Book Co., Inc., New York, Toronto and London, 1950.

The Ethical Basis of Medical Practice. W. L. Sperry, Dean of the Harvard Divinity School. 185 pp. \$2.50. Paul B. Hoeber, Inc., Medical Book Department of Harper & Brothers.

Old Age, Some Practical Points in Geriatrics and Gerontology. T. H. Howell, Lecturer in Problems of Old Age, St. Bartholomew's Hospital, Consulting Physician, Bermondsey Mission Hospital, Physician, Geriatric Unit, St. John's Hospital, Battersea. 108 pp., illust., 2nd ed. 10s. 6d. net. H. K. Lewis & Co. Ltd., London, 1950.

Annual Review of Medicine. W. C. Cutting, Editor, Stanford University School of Medicine, H. W. Newman, Associate Editor, Stanford University School of Medicine. 484 pp., Vol. I. \$6.00. Published by Annual Reviews, Inc., on sale by Annual Reviews, Inc., Stanford, California, U.S.A., 1950.

The 1949 Year Book of Endocrinology, Metabolism and Nutrition. December 1948-January 1949. Endocrinology edited by W. O. Thompson, Clinical Professor of Medicine, University of Illinois College of Medicine; Attending Physician (Senior Staff), Henrotin Hospital; Attending Physician, Grant Hospital of Chicago. Metabolism and Nutrition, edited by T. D. Spies, Chairman, Department of Nutrition and Metabolism, Northwestern University School of Medicine; Director, Nutrition Clinic, Hillman Hospital, Birmingham, Alabama. 550 pp., illust. \$4.75. The Year Book Publishers Inc., Chicago, Ill.

Developments in Diphtheria Prophylaxis. L. B. Holt, The Wright-Fleming Institute of Microbiology, St. Mary's Hospital, London. 181 pp., illust. 42s. net. William Heinemann Medical Books Ltd., London, 1950.

Midwifery. Principles and Practice for Pupil Midwives, Teachers Midwives and Obstetric Dressers. by R. C. Brown, Obstetric Surgeon, City of London Maternity Hospital and Pfaistow Maternity Hospital, and B. Gilbert, formerly Second Gynaecologist, Metropolitan Hospital, London. Infants' Section by R. H. Dobbs, Hon. Physician, City of London Maternity Hospital. 831 pp., illust., 2nd ed. \$3.50. Edward Arnold & Co., London; Macmillan Co. of Canada Ltd., 1950.

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B.C.G. Vaccination in Theory and Practice. K. N. Irvine, Medical Superintendent Smith Isolation Hospital; Physician to the Henley War Memorial Hospital. Foreword by K. Birkhaug, Chief of the B.C.G. Laboratory, New York State Department of Health. 130 pp. \$4.00. Charles C. Thomas, Springfield, Illinois.

Water and Salt Depletion. H. L. Marriott, Middlesex Hospital, London, England. 80 pp., illust. \$2.75. Charles C. Thomas, Springfield, Illinois.

Chemical Developments in Thyroidology. W. T. Salter, Professor of Pharmacology, Yale University School of Medicine, New Haven, Connecticut. 87 pp., illust. \$2.75. Charles C. Thomas, Springfield, Illinois, \$2.75.

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The Rhesus Danger. Its Medical, Moral and Legal Aspects. R. N. C. McCurdy. 138 pp. 5s. net. William Heinemann, Medical Books, Ltd., London, 1950.